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GAZETTE DISK MASTHEAD

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64/128 VIEW

Tom Netsel

A special offer about back issues of Gazette Disk, *a new version of* NovaTerm, *a word about* Gazette *advertisers, and more.*

Several *Gazette* subscribers who made the move from paper to disk have called recently with a complaint. When I announced the change in format last year, they made the switch as soon as they learned the details. A number of these subscription changes, however, didn't go into effect until we mailed out the February or March disks. As a result, some longtime subscribers are missing one or two issues of *Gazette.*

The problem stems from the fact that magazine and disk labels are processed and printed months in advance, so that by the time the subscription changes were made, the January and February disk labels had already been printed. These subscribers will still get 12 issues for the year, but they may have missed an issue or two at the beginning.

For years the price for a single *Gazette Disk* has been $9.95 plus $2.00 for shipping and handling, but for those of you who may have missed the January and/or February Gazette Disk, we're making a limited offer. You can get these back issues—and these issues only—for only $4.95 each; get both for $8.00. This price includes shipping and handling for U.S. customers. If you live outside the United States, please add an additional $2.00 with each order to help cover postage.

To order these disks, send check or money order to Gazette Disk, COMPUTE Publications, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. Be sure to specify which issues you want.

On this disk, you'll find a review of an emulator that will let you run programs written for the 64 on your IBM PC or clone. It's interesting that the PC, with the addition of video adapters and sound cards, is just now catching up with the 64. Nick Rossi reviewed this interesting product, and you'll find his comments in the Feature's section of this issue.

Many of you will recognize Nick Rossi as the author of *NovaTerm.* This outstanding program is popular with many Commodore owners who like to contact other computers via modem. *NovaTerm* is a shareware terminal program that's been available for several years, but Nick is constantly improving it and making revisions.

Nick reports that version 9.5 of *NovaTerm* is now available, and he'll be happy to provide a copy of his telecommunications program to any Gazette subscriber who requests it. All he asks is that you provide him with a blank Commodore disk and postage-paid mailer. If you're looking for a full-featured telecommunications program, you might want to take advantage of this offer. Stick a disk and self-addressed mailer in an envelope and mail it to Nick Rossi, 10002 Aurora Avenue North, Seattle, Washington 98133.

While you're at the post office, I hope you'll drop a line to our advertisers. SOGWAP, Disks O'Plenty, and FGM Connection are long-time *Gazette* supporters who offer a number of outstanding products that can benefit any Commodore software library.

New to *Gazette Disk* this month is Microstorm. This company, which advertised with Gazette in its paper days, is headed up by Daniel Lightner. Anyone who has read *Gazette* for any length of time should recognize Lightner's name as one of *Gazette's* most prolific programmers. I hope you'll consider these companies and their products, and support them whenever you can.

To make it as simple as possible for advertisers to inform you of their products and services, we offer them a variety of formats. Those with programming skills can write a program that will deliver their message. A simpler way is to send text that can be read by *Gazette's* text reader program, the same one that we use for our on-disk articles. We also offer a program called *Screen Thing* that we include on the disk. This utility lets you design a screen using text, color, and keyboard graphics. The saved screen then becomes an ad that our program displays. Most of the in-house *Gazette* ads are created with this program. (Even if you don't use *Screen Thing* to design an ad, feel free to play around with it.)

The three different ways of displaying advertisements from our disk menu have caused confusion for some readers. After viewing an ad, they aren't sure about how to return to the menu.

If you notice the ad from SOGWAP, for example, you'll see a great little two-screen program that runs on its own. Take a look at the prompts that appear onscreen. They tell you to press the space bar to toggle to the next page and to press the left-arrow key to return to the menu. The left-arrow key is the one to the left of the 1 key. It's not the Return key.

Disk O'Plenty's ad is an example of another stand-alone program, but this ad waits until you press any key to return to the menu. The ads created with Screen Thing also wait until you press any key, which could be the Return key or any other except Run/Stop.

The other format used to display ads is the one that requires a text reader. You can recognize these all-text ads by the help screen that appears before you actually read the message. This is the same text reader that we use to display the on-disk articles. As the menu instructs, press M to return to the menu.

Some other aspects of the disk have been confusing to some new subscribers, so maybe I can explain a few things. For the most part, text, articles, and program documentation appear on the front of the disk, with programs on the flip side. There are some exceptions to this, of course, depending on space requirements. As I write this column, I notice that I have less than 35 blocks of space remaining on the front of the disk, and yet I still have an article and "Feedback" to add in addition to this editorial. (That's why this column is on the flip side of the disk.) For the most part, however, look for text on the front and programs on the back.

I hope by now you've figured out that the columns, features, and ads are designed to be run on a 64 or a 128 in 64 mode. Since the majority of our subscribers can use this format, this is the format of choice. Whenever we present programs exclusively for the 128, those programs go on a separate menu, the 128 Menu. A program from this menu runs in 40-column mode. If you run it in 80-column mode, the menu program will be partially garbled.

I've had a number of suggestions about offering customized printouts, screen colors, headers, page numbers, margin sizes, and other parameters. Naturally, I'd like to offer all things to all people, but the text reader we now use is the best compromise we could find for size,

convenience, and compatibility. Maybe a programmer would like to submit a text reader that would allow customization, load quickly, and still be compatible with our menu program.

As I've already mentioned, the articles and documentation on Gazette Disk are in *SpeedScript* format. You can load any of these text files into a compatible word processor and make your own custom printouts. If your word processor can't use *SpeedScript's* PRG format, there are a number of file utilities that will convert them into SEQ files for use with other word processors.

Programs on *Gazette Disk* aren't copy-protected, and I encourage you to make a backup copy or a work disk with certain files from which to make corrections and alterations. To make this job easier for you, I'd suggest you use *Hyperdrive* and *Directory Manager,* programs that appeared on the April *Gazette Disk.* These programs can make fast copies of an entire disk and help you customize your disk directories.

This month, I've included another utility that can help you manipulate *Gazette* programs and files. Look for *Fast File Copier.* We provide this program on our *SpeedScript* disk, and it's a great tool for copying BASIC and machine language files from one disk to another. I think it's a program that you'll find quite useful.

(If you're reading the *Gazette* columns, remember to flip this disk back over now to access the other articles. If you forget and get a DISK ERROR message, flip the disk before pressing Return.)

Feedback

Questions and comments from our readers.

Bug-Swatter

Some 128 users report having trouble with the February disk in loading the onscreen instructions to the game *Starship Battle.* While the instructions are included as a text file that can be read from the menu, the program also offers the option of printing the instructions onscreen at the start of the game.

Apparently, the GEOS program on that disk corrupted a *Starship Battle* instruction file. That 88-block file, SB.INT, is included on this disk. If you have problems with your copy of the game, make a copy of *Starship Battle* and delete SB.INT on the copy. Then load SB.INT from this disk and save it to your copy of *Starship Battle.* It's always best to make any corrections on a copy rather than on your original *Gazette Disk.* You can use *Hyperdrive* on the April *Gazette Disk* to make a backup copy of the disk and then use *Fast File Copier* on this disk to delete and copy the SB.INT files.

Starship Battle consists of numerous files. To make the boot program easier to recognize on the disk, its filename was changed from SB to *Starship Battle.* If you copy SB.INT and use the onscreen instructions when playing the game, be aware that SB.INT tries to boot SB when

you are ready to leave the instruction mode and start the game itself. You'll then have to change the Starship Battle filename back to SB in order for the game to load.

In the March "Machine Language" column, XBASIC.ML would not load properly from the menu. The problem was with the dynamic loader's encountering text already on the screen. To make the change on your disk so that the program will load from the menu, load MENU.COLUMN and enter line 991 as shown below.

```
991 PRINT"[2 DOWN][7 SPACE]FLIP TO OTHER SIDE OF DISK"
```

In case you're not familiar with typing in BASIC code, [2 DOWN] means press the down-cursor key twice and [7 SPACE] means press the space bar seven times. Of course, you don't have to use the menu to run the program. You can load and run XBASIC.ML, which is on side 2 of the disk, as you would any BASIC program.

Jack Cornblue of Casselberry, Florida, noticed in the March issue that the "Feedback" column had inadvertently been saved with the filename FEDBACK, which the menu program cannot locate. To fix this error, you can either rename the file to FEEDBACK or change the Column menu.

To change the menu, load MENU.COLUMN, list line 790, and change the second FEEDBACK to FEDBACK. Press Return and run the program. Then the menu will call up and read the filename FEDBACK. We regret the error and apologize for any inconvenience this has caused our subscribers.

Gazette Disks and User Groups

We assume that the type-in programs that were printed in the magazine were copyrighted and that the programs on the new disk are also copyrighted. If that is the case, what is your position on placing the disks in our club's library? We presently make copies of the disks in our library available at a nominal $1 copying fee to our members. Will we be allowed to follow the same policy with *Gazette Disks* since the club would have a subscription? Would we be able to keep the disks in a lending library and allow members to check them out for a period of time?

We will base our decision on subscribing upon your answers to these questions.
ROGER HOYER
CINNCINNATI COMMODORE COMPUTER CLUB
MILFORD, OH

You are correct in stating that the programs published in the old *Gazette* and on the new disk are copyrighted. (The only exception is the PD programs featured in the "PD Picks" column. The programs are in the public domain and appear on this disk simply as a convenience to our subscribers.)

In the past, *Gazette* held the position that people who purchased copies of the magazine had the right to use the programs that it contained. Those purchasers didn't necessarily have to type them in. They could obtain copies from a friend or user group as long as the person obtaining the copy owned the magazine and had the instructions for using the programs properly. Many user groups that subscribed to our disk made copies of the disks available to

their members who were also magazine subscribers. At that time *Gazette Disk* did not include program documentation.

Now that *Gazette* is entirely a disk product, all the programs are ready to use. There's no more need to spend long sessions at the keyboard typing in program listings. This makes *Gazette Disk* a more valuable product, which is why we charge more and, thanks to you subscribers, *Gazette* is still in business.

If you place the new *Gazette Disk* in your library, some people will try our product and decide that they'd like to subscribe. Other people will try it and decide that it's not for them. You'll also have a number of people who'll decide not to subscribe when they can get the disk free from the club library. That's a chance we'll just have to take. If you sell our disk for a dollar or give away copies to any member who wants one, then I doubt if *Gazette* can survive for long. Also, that wouldn't be fair to those who have paid for their subscriptions.

In your letter you said that your decision to subscribe would be based on the answers to these questions. I hope that by understanding the reasoning behind these answers, you will decide to subscribe and help *Gazette* continue to support the Commodore 64 and 128.

Classic Computers

The Historical Computer Society is an organization of antique computer buffs. We publish a newsletter called *Historically Brewed* that contains interesting, informative, and often humorous articles about the machines, ideas, and people who forged computer history. Many people have fond memories of their early computing days. Never before has a device evolved so rapidly as to produce nostalgic artifacts in less than a quarter of a century.

HCS is a nonprofit organization dedicated to preserving older classic computer hardware, software, and literature while educating and helping its members as well as the general public. HCS intends to become the authority on retired personal computers. Hundreds of old computers are thrown out every day as junk, but HCS believes these outmoded machines have value. HCS can help owners find answers about system operation (both commercial and home brewed), peripherals, software, books, magazines, and service. Feel free to contact our group for more information.

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Machine Language

Jim Butterfield

Text to *SpeedScript*

COMPUTE's popular word processing program, *SpeedScript,* expects most input to come from the keyboard or from a previously saved *SpeedScript* file. It can't read regular text (SEQ) files, although it can write them, using an option of the PRINT (Ctrl-Shift-P) command.

Program MAKESS, given here, will allow you to convert a SEQ text file into a *SpeedScript*-compatible PRG file. The principles we use here can be used for many other types of file conversions. For example, PETASCII to ASCII is a similar character-translation job.

There's more to making a *SpeedScript* file than just changing the file type. *SpeedScript* generally uses screen codes rather than ASCII. Here's a detailed list of the translations needed:

1. *SpeedScript* files must start with a dummy load address. The most usual values for these two bytes are 0 and 37, or hexadecimal 00 25. We'll have the BASIC program put these in place.

2. The Return character, code 13, must be replaced by the left-arrow character, code 31.

3. Characters from 64 to 95 (mostly lowercase alphabetic) should have 64 subtracted from their value.

4. Characters from 96 to 127 don't matter much for PETASCII, but in ASCII they represent mostly uppercase alphabetics. Subtract 32 from them.

5. Characters from 192 to 223 don't do much in ASCII, but in PETASCII files they are the uppercase alphabetics. Subtract 128 from them.

6. Most characters not accounted for above are OK as they are (numerics, for example) or don't have a *SpeedScript* equivalent. Things like TAB or FormFeed characters will have to be edited manually.

Note that the above rules convert on both ASCII and PETASCII files. One program does both.

Program Coding

BASIC opens the input and output files and writes the first two bytes to the output. Then it calls in the machine language program to zap through the files.

We start (at hex 2000) by connecting to the input file.

```
LDX #$01 : JSR $FFC6
```

We read a character and stash the status word so we can check for End of File later.

```
JSR $FFE4 : LDY $90 : PHP
```

One character is all we need for now. Disconnect from the input file, preserving the character in A.

```
PHA : JSR $FFCC : PLA
```

Now let's print the character so the user can watch what's going on. If the file is true ASCII, this won't look especially neat.

```
JSR $FFD2
```

The character is still in A, but we'll move it to X as its permanent home.

```
TAX
```

Here's my plan. The character stays in X; in A we put a tentative translation. For example, if the character is Return ($0D), we will want to output a value of $1F. Watch closely.

```
LDA #$1F : CPX #$0D : BEQ $203D
```

See the scheme? Address 203D, ahead, is our output code. If we have a good translation in A, we can leap directly there. Let's try it again. This time, we know that characters in the range 64-91 need to have 64 subtracted from them. Store the character again into A, subtract, and then test.

```
TXA : SEC : SBC #$40
```

The minus 64 (hex 40) value is in A. Test for the correct range.

```
BCC $202C : CPX #$60 : BCC $203D
```

OK, we've taken care of lowercase alpha and its cousins. We'll dump any characters in the unwanted range of 160-191.

```
02024  E0 A0    CPX #$A0
02026  90 04    BCC $202C
02028  E0 C0    CPX #$C0
0202A  90 11    BCC $203D
```

Let's take stock. Character 0D and those in the ranges 64-95 and 160-191 have been disposed of. Let's postpone work on characters over 128.

```
TXA : BMI $2036
```

Using the same method as before, characters in the range 96-127 (hex 60-7F) will have 32 subtracted from them.

```
SEC : SBC #$20 : CPX #$60 : BCS $203D
```

At address 2036, the negative character values rejoin. All we need to do now is to test for the range 192 and above, in which case we will subtract 128 (hex 80).

```
TXA : CPX #$C0 : BCC $203D : SBC #$80
```

Here we are at address $203D, the output routine. All characters rejoin here so that the contents of the A register may be sent to a file. First, we must connect to the output file.

```
PHA : LDX #$02 : JSR $FFC9 : PLA
```

Send to the output file, and then disconnect.

```
JSR $FFD2 : JSR $FFCC
```

Check the Run/Stop key, in case the user wants to stop the program.

```
JSR $FFE1 : BEQ $2053
```

Remember that we stashed the input file status long ago? Time to recall it and see if we are at the end of the file. If not, back we go to do the whole thing again.

```
PLP : BEQ $2000
```

When we find the end-of-input file, back we go to BASIC, where both files will be closed.

```
RTS
```

One more detail to take care of. If the user pressed Run/Stop, we can exit instantly to BASIC...almost. But we mustn't forget that the stack still contains that input status. We can't return to BASIC until we get rid of it with a pull command (PLP or PLA). So, at $2053, we code that.

```
PLP : RTS
```

(Note: The following is a listing of the source code. It is also saved on this disk in PRG format as MAKESS.SRC. That file can be loaded and listed so you can examine the code. You can also load it into any word processor that reads such files.)

```
100 print "source - makess - jim b"
110 end
120 *=$2000   ; program start addrs
130 start ldx #$01  ; from infile...
140  jsr $ffc6
150  jsr $ffe4      ; get character...
160  ldy $90        ; log end-of-file
170  php
180  pha
190  jsr $ffcc      ; disconnect infile
200  pla
205 ; put inchar into x;
206 ; use a to stage modified chars
210  jsr $ffd2      ; print character
220  tax            ; copy to x reg
225 ; if it's <return>, output '
'
230  lda #$1f
240  cpx #$0d       ; if <return>
250  beq send       ; .. print it
260  txa            ; else..
270  sec
280  sbc #$40       ; subtract 64..
290  bcc test2      ; < 64, skip
300  cpx #$60       ; 64 to 95 ..
310  bcc send       ; .. yes, send it
320  cpx #$a0       ; 96 to 159 ..
330  bcc test2      ; .. yes, skip
340  cpx #$c0       ; 160 to 191 ..
350  bcc send       ; .. yes, send it
```

```
355 ; not alpha-group character...
356 ; (64-95 or 160-191)...
358 ; test for 96-127; if found,
359 ; print [ char - 32 ]
360 test2 txa   ; this code at 202c
370  bmi test3  ; if 128 or higher
380  sec
390  sbc #$20   ; subtract 32
400  cpx #$60   ; 96 or higher ..
410  bcs send  ; .. yes, send it
415 ; not char 64-127 or 160-191
416 ; test for 0 - 64, 128-159
417 ; if found, print [ char ]
420 test3 txa   ; this code at 2036
430  cpx #$c0
440  bcc send
445 ; all that's left is 160-255
446 ; print [ chr - 128 ]
450  sbc #$80
460 send pha    ; at 203d, write file
470  ldx #$02
480  jsr $ffc9  ; select outfile
490  pla
500  jsr $ffd2  ; send char to file
510  jsr $ffcc
520  jsr $ffe1  ; check stop key
530  beq stop
540  plp        ; recall e-o-f signal
550  beq start  ; loop if not eof
560  rts
570 stop plp    ; at 2053
580  rts
```

D'Iversions

Fred D'Ignazio

The Battle for Cyberspace Highway: Whose Reality Rules the Road?

In the next decade we will board virtual vehicles and travel electronic highways into cyberspace. Will all of us follow the same road into virtual reality? Will we be piloting the same vehicles? Will some of us come booming into cyberspace on big Mack trucks while others make the journey in secondhand Chevies and Fords? Will a number of us glide in on rollerblades, skateboards, and mopeds?

Until recently I figured we would all be on the highway together, obeying common rules of the road, driving politely and considerately, and scooting along in our minivans and economy cars…

…NOT!

I had an experience recently which made me realize that there are sharply divided camps of computer users who are approaching cyberspace in their own dimension and, like me, they have been only dimly aware of the other dimensions. The problem is that each dimension's insulated point of view is at risk since all dimensions are now rushing together toward a frightening collision.

My day started innocently enough. A local elementary school had invited me to talk with the students about what it would be like in the future as an author in a multimedia world. I talked with hundreds of children in almost every grade from second grade through sixth grade. I leaped, I clowned, I stood on chairs and crawled around on the floor. It was an exciting, intellectually stimulating day—both for the kids and me.

I began my talk by showing the kids and their teachers some of the more than 20 children's books that I've written and by talking about what it's really like to write a book and have it published. The teachers really liked that part. But then, without meaning to, I suddenly took a detour, back-pedaled into a new dimension, and entered some pretty shaky ground. I brought up the subject of videogames. I began by showing the kids a little home movie I had made only the month before. I had taken my camcorder into a video arcade at the mall, and I had walked around the arcade shooting the different games. I shot video closeups of the game screens, game controls, and the kids in the arcade playing the games.

The students in my audience all perked up when they saw the videogames on the school's TV screen. They would have been happy just watching footage of some of their favorite games, but I wanted to use my little movie to make some important points. I paused the tape several times in order to make some points—despite adult stereotypes to the contrary.

1. Videogames are highly sophisticated "swear you are there" computer simulations.
2. Videogame screens function as virtual instrument panels and as complicated, realtime windows into the game world.
3. Videogame controls are easily as complicated as a computer keyboard and (in multiplayer games) feature as many as 12 buttons, 6 trackballs, and 6 joysticks.
4. Unlike classroom computers, each videogame has a totally different user interface.
5. Without formal instruction, kids fearlessly move from videogame to videogame and are highly motivated and highly competent at playing each game.

Judging from the expressions on their faces, the teachers in the room missed all these points. I think I lost them when I described the scenes from the videogame arcade as "educational." The teachers had been expecting me to show the students some pictures of nice, tame, little classroom computers with keyboards and mice and display screens featuring wholesome educational software. Instead, I was showing their students motorcycle simulators, tank simulators, and scenes from *Dungeons & Dragons* fantasy games.
Even worse, I was making wild and radical claims such as the following.

1. Arcade games look a lot more like computers of the future than classroom computers.
2. Computer users in the future will manipulate data in simulated 3-D experiences much like videogame players interacting with a challenging game.
3. Arcade games are more powerful and effective learning machines than typical classroom computers.

4. Kids can learn to become multimedia "authors" by designing their own interactive visualizations and simulations of the real world or of characters and events drawn purely from their imaginations.

The kids took all this in. By the end of the day I had second graders carrying on excited discussions about creating "simulations" of experiences from their homes, families, and everyday lives. I had sixth graders discussing complex 3-D models of recycling, the effect of the destruction of the rain forests on global ecology, and history simulations of famous battles.

But the teachers were quiet. At the end of my talks they gathered the kids together and left the room unsmiling and oblivious to the tremendous excitement exhibited by their students.

This experience troubled me. Why was I able to share my vision with the students but not with their teachers? Why were the teachers so uncomfortable with the idea of videogames converging with classroom computers?

Of course, I understood that the teachers reacted the way most adults react to videogames: They were negative and hostile. No wonder! To adults all videogames appear the same. They are all sexist, violent, antisocial, and—worst of all—boring. The pay-per-play games are set up in dark, sleazy pinball arcades, magnets for drug traffickers, deadbeats, and other unsavory types. The games themselves are no-brainers, Pavlovian rat mazes which condition children to pump in precious quarters and push endless buttons in return for a worthless food pellet (a game energy point).

Is this disapproval the reason the teachers looked so unhappy after my sessions? Didn't the teachers agree with any of my ideas about converging technologies? Couldn't they see beyond the primitive computers of today to a new era of multimedia computing?

After a lot of thought, I finally realized that maybe the teachers represented one class of computer users and the kids another. I decided maybe there really were different realities for different computer users. Maybe computer enthusiasts are not just one big happy family, after all. Maybe each type of computer user is going down a completely separate path toward cyberspace thinking that his or her path is the one true way.

For the first time I realized that the convergence of technologies which I have been predicting for the past ten years is also going to be a convergence of people's realities. And this convergence is going to be profoundly confusing and disorienting for everyone, but especially for adults, the people in control—the bosses, the teachers, the power structure.

Why are these computer realities so different? Why are computer users so different? A lot of what happens depends on how we experience the world—and how we learn.

How we learn depends on what we think is real.

Beginner BASIC

Larry Cotton

The Challenges and CHR$

I have received two responses to my recent programming challenge to write a program which plays a computer version of the card game known as Sets. I've also received several programs which round numbers. So far no one has taken up my challenge of playing the Westminster chimes! All the programs I've received seem to be good examples of solid BASIC programming; I'll wait another month or so before presenting highlights of the best BASIC programming techniques and explanations of how each challenge attacked the problems in his or her unique way.

In the meantime, I was idly browsing through the Commodore 64 Programmer's Reference Guide (PRG) and noticed that there are a few characters that can be created on the 64's screen that don't appear on any of the keys' front faces. Here they are.

▨ – diagonal dark lines on a light background

▧ – a mirror image of the above

▩ – a checkerboard with eight dark squares and eight light squares—a mirror image of the one on the + key (▩)

✔ – a check mark

All four characters can be seen by shifting into the lowercase mode. To do this, press the Commodore logo key (lower left corner of the keyboard) and one of the Shift keys at the same time. You can also use PRINT CHR$(14) to display the lowercase character set.

Once the lowercase character set is visible, you then press a combination of keys to see the four hidden characters. Here are the key combinations needed to create each special character.

▨ – Shift and the £ key

▧ – Commodore key and the * key

▩ – Commodore (or Shift) key and the up-arrow key

✔ – Shift key and the @ key

The CHR$ codes which print these characters must be used when the 64 is in its lowercase character set. To illustrate this, look at the following short program. It is CHR$ on this disk.

```
10 PRINTCHR$(14):REM LOWERCASE
20 PRINTCHR$(169):REM ▨
30 PRINTCHR$(233):REM ALTERNATE
40 PRINTCHR$(127):REM ▧
50 PRINTCHR$(223):REM ALTERNATE
60 PRINTCHR$(126):REM ▩
```

```
70 PRINTCHR$(222):REM ALTERNATE 1
80 PRINTCHR$(255):REM ALTERNATE 2
90 PRINTCHR$(186):REM ✔
100 PRINTCHR$(250):REM ALTERNATE
```

Do you notice an oddity? The checkerboard pattern above has three CHR$ codes for the same symbol: 126, 222, and 255! Likewise, the symbol for pi has the same three CHR$ codes in uppercase mode.

You can also use these characters when using *SpeedScript, COMPUTE's* word processor. (This article and all of the articles on *Gazette Disk* are actually *SpeedScript* documents.)

Mirror Cursor

Sometimes it's fun to simulate a cursor with a character which alternates between mirror images. Here's a very simple, non-error-checking program which illustrates this technique. This program is called Cursor.

```
10 PRINT"[CLR][WHT]"
20 C1=233:C2=127:REM TRY 222, 230
30 PRINT"Enter your name, then press RETURN."
40 PRINTCHR$(14):REM SWITCH TO LOWERCASE
50 GETA$:IFA$=CHR$(13)THEN110
60 N$=N$+A$:PRINTA$;
70 PRINTCHR$(C1);:GOSUB100
80 PRINTCHR$(C2);:GOSUB100
90 GOTO50
100 FORD=1TO100:NEXT:PRINT"[LEFT]";: RETURN
110 PRINT" "
120 PRINT"[DOWN]Your name is "N$"."
```

More CHR$ Codes

In addition to these sparsely documented characters, I have collected a few additions/amplifications to the ASCII and CHR$ code chart in PRG. Some of them include the following.

CHR$(3) is STOP. It won't stop a running program, however.

CHR$(20) deletes a character.

CHR$(148) inserts a character. Although PRG shows the key-like illustration, it doesn't say which function is invoked.

CHR$(19) returns the cursor to Home (upper left-hand corner).

CHR$(147) clears the screen. Again, PRG shows only the key without distinguishing what it does.

CHR$(39) is the apostrophe.

CHR$(44) is the comma. They both look alike in PRG.

The CHR$ codes for the 64's 16 available colors are as follows; some are mentioned in the CHR$ code chart, others are not.

Black	144
White	5
Red	28
Cyan	159
Purple	156
Green	30
Blue	31
Yellow	158
Orange	129
Brown	149
Light Red	150
Dark Gray	151
Medium Gray	152
Light Gray	155
Light Green	153
Light Blue	154

Cursor Controls

They're all mentioned in PRG, but scattered throughout.

Up	145
Down	17
Left	157
Right	29

Case Switches

To uppercase	142
To lowercase	14

Reverse Characters

On	18
Off	146

Everyone knows that a carriage return results from PRINT CHR$(13), but did you know that PRINT CHR$(141) gives you a shifted carriage return? What's that used for? You may know that when entering a BASIC programming line, if you get stuck in the so-called quote mode, you can get out of it instantly by pressing Shift-Return.

But knowing about CHR$(141) can be useful in IF-THEN or ON-GOTO statements that test which keys a user is pressing. Sometimes the Shift-Lock key accidentally gets pressed, in which case a good error-trapping program would look for that situation as in the following.

```
10 GETA$:IFA$=CHR$(13)ORA$=CHR$(141) THEN ....
```

Alphabets & Symbols

Also on this disk are a couple of programs that display the alphabet and the symbols in both upper- and lowercase. Pressing the space bar toggles between upper- and lowercase. With *Alphabets,* you can see that all the characters change to symbols when toggling between upper- and lowercase.

Alphabets

```
10 PRINT"[CLR][WHITE]UPPERCASE"
20 PRINT
30 FORT=65TO90
40 PRINTCHR$(142)TCHR$(T),
50 NEXT
60 PRINT:PRINT
70 FORT=193TO218
80 PRINTTCHR$(T),
90 NEXT
100 PRINT:PRINT"[DOWN)PRESS SPACE BAR
160 GETA$:IFA$<>" "THEN160
170 IFT=0THENT=1:PRINTCHR$(142); "[HOME]UPPERCASE";:GOTO160
180 T=0:PRINTCHR$(14);"[HOME]LOWERCASE";:GOTO160
```

With the program called *Symbols,* most of the symbols remain the same in both upper- and lowercase, but the ones we've discussed above change to the undocumented characters.

Symbols

```
10 PRINT"[CLR][WHITE]UPPERCASE"
20 PRINT
30 FORT=91TO96
40 PRINTCHR$(142)TCHR$(T),
50 NEXT
60 FORT=123TO127
70 PRINTCHR$(142)TCHR$(T),
80 NEXT
90 FORT=161TO192
100 PRINTCHR$(142)TCHR$(T),
110 NEXT
120 FORT=219TO255
130 PRINTCHR$(142)TCHR$(T),
140 NEXT
150 PRINT"[DOWN)PRESS SPACE BAR"
160 GETA$:IFA$<>" "THEN160
170 IFT=0THENT=1:PRINTCHR$(142); "[HOME]UPPERCASE";:GOTO160
180 T=0:PRINTCHR$(14);"[HOME]LOWERCASE";:GOTO160
```

Alphabets is the program that runs from the Gazette menu, but check out the other programs mentioned in this column. In addition to *Alphabets* you'll find *CHR$, Cursor,* and *Symbols.*

Programmer's Page

David Pankhurst

Conversions

Translating is a fact of life with humans—and so too with machines. The way one computer or program understands information can be vastly different from the way others do.

For instance, take the decimal number 147. If you use it with the PRINT command, you get 147. If you enter it as PRINT CHR$(147), you clear the screen. If you poke it to the screen directly, you get a reversed S. And when it's listed as part of a BASIC program, it prints out the keyword LOAD. And that's just with one computer!

When computers communicate, much of the difficulty lies in translation. Slight differences in dialect in human speech are still comprehensible to us, but the ultraprecise computer bogs down if everything isn't just so. This month we'll look at translation problems and some solutions.

Ubiquitous ASCII

The most common format for computer code is ASCII, an acronym for American Standard Code for the Interchange of Information. ASCII was created to be the standard for communicating among computers—and it very nearly is. But not all codes are used by all manufacturers to mean the same thing. The resulting differences spell difficulties in translating.

For the 64, we encounter primarily three types of codes, all based on ASCII. These are ASCII, PetASCII, and Screen Code.

ASCII, sometimes called True ASCII, is not used by the 64, although it's vital for talking to other computers. The original standard called for 128 codes (0-127), consisting of control codes (like Return), punctuation, digits, and upper- and lowercase letters. Later versions (such as the character set used by IBM-compatible computers) make use of values from 128-255. Since these latter characters aren't available on the 64, we won't worry about translating them.

PetASCII (also known as PETSCII) is the code we're most familiar with. It too consists of punctuation, letters, and control codes. Unlike True ASCII, it uses 256 codes, with the extra 128 codes providing additional commands, graphics characters, and inverse characters. Some of these codes do double duty as both characters and commands. For instance, code 147 clears the screen, but if it's printed in quote mode, the familiar inverse S appears.

Screen Code or POKE ASCII is the set of codes for screen display. When we print text, the 64 operating system takes care of translating, but when we poke to the screen directly, we must take over the task ourselves. Some programs work with these codes instead of PetASCII. *SpeedScript* is an example.

These ASCIIs not only have different characters available, but they also have different values for the same characters, as can be seen from the following table.

CODES	RESULT	
0-31	True ASCII:	Various control codes
	PetASCII:	Various control codes
	POKE ASCII:	Lowercase letters
32-63	True ASCII:	Digits/Punctuation
	PetASCII:	The same
	POKE ASCII:	The same
64-95	True ASCII:	Uppercase letters
	PetASCII:	Lowercase letters
	POKE ASCII:	Uppercase letters
96-127	True ASCII:	Lowercase letters
	PetASCII:	Graphics characters
	POKE ASCII:	Graphic characters
128-159	True ASCII:	Not present
	PetASCII:	Various control codes
	POKE ASCII:	Reverse of 0-31
160-191	True ASCII:	Not present
	PetASCII:	Graphics characters
	POKE ASCII:	Reverse of 32-63
192-223	True ASCII:	Not present
	PetASCII:	Uppercase letters
	POKE ASCII:	Reverse of 64-95
224-255	True ASCII:	Not present
	PetASCII:	Graphics characters
	POKE ASCII:	Reverse of 96-127

The following functions will let you translate from among these three types of codes. These functions are found on this disk in file FN.TRANS.

```
600 REM CODE CONVERSION FUNCTIONS
605 :
650 REM FN PS(X):PETASCII->SCREEN POKES
655 REM FN SP(X):SCREEN POKES->PETASCII
660 REM FN CV(X):TRUE ASCII<->PETASCII
665 :
670 DEF FN P1(X)=X+128+128*(X>31)+64* (X>63)-32*(X>95)-
96*(X>127)+128*(X>159)
675 DEF FN PS(X)=FN P1(X)+64*(X>191)+ 33*(X>254)
680 DEF FN SP(X)=X+64+64*(X>31)-128* (X>63)+64*(X>95)+192*(X>127)-
64*(X>191)
685 DEF FN A1(X)=X+(X*(X>127))-126* (X>127)
690 DEF FN A2(X)=X-32*(X>64 AND X<91) +32*(X>96 AND X<123)+128*(X>192
AND X<219)
695 DEF FN CV(X)=FN A1(FN A2(X))
```

The three functions used are PS(), used for translating from PetASCII to Screen Code; SP(), which does the reverse; and CV(), which converts True ASCII to PetASCII, and back again.

To translate between True ASCII and Screen Pokes, the functions are combined as follows.

FN PS(FN CV(X)) converts True ASCII value X to Screen Code.

FN CV(FN SP(X)) reverses the process.

You'll notice several other functions in the listing (functions A1, A2, and P1) that aren't useful in themselves. Because the final functions are so large, they have to be broken up into smaller ones to fit on each BASIC line. These smaller functions are then combined to form the main functions.

Lines 685-695 are from a submission by Stacy Olivas, of Graham, Washington. Her function translates from True ASCII to PetASCII and back again. If a program comes across a character that can't be translated, that character may be changed to code 126, the True ASCII tilde character, which is a graphics character in PetASCII.

The other two functions split the task of translating between PetASCII and POKE ASCII. As I've already mentioned, translating between POKE ASCII and True ASCII can be accomplished by first translating to PetASCII.

Putting Them to Use

Using these functions requires only a simple framework. For instance, the following is a piece of code using the functions that translate a file from one format to another. (This program is on the flip side of this disk as well. It's called Convert.)

```
700 PRINT"*** INPUT FILE ***":GOSUB900: OPEN2,8,2,X$+","+Y$+",R":F=X
710 PRINT"[DOWN]*** OUTPUT FILE ***":
GOSUB900:OPEN3,8,3,X$+","+Y$+",W":T=X
720 GET#2,X$:X=ASC(X$+CHR$(0)):IF ST AND 64 THEN790
730 IFF=1ANDT=2THENX=FN CV(X)
735 IFF=1ANDT=3THENX=FN PS(X)
740 IFF=2ANDT=1THENX=FN CV(X)
750 IFF=2ANDT=3THENX=FN PS(FN CV(X))
760 IFF=3ANDT=1THENX=FN SP(X)
770 IFF=3ANDT=2THENX=FN CV(FN SP(X))
780 PRINT#3,CHR$(X);:PRINT".";:GOTO720
790 CLOSE2:CLOSE3:PRINT"DONE":END
900 INPUT"[DOWN]FILENAME";X$:INPUT" [DOWN]FILE TYPE: SEQ, PRG, USR
(S,P,U)" ;Y$
910 PRINT"[DOWN]FILE CONTENTS:":PRINT" 1-PET ASCII 2-TRUE ASCII 3-
SCREEN POKES"
920 INPUTX:RETURN
```

The program opens both an input and an output file. Lines 900-920 ask for details about the file, including the type and the contents. The same is asked of the output. Based on the answers, the various conversion functions are called in lines 730-770.

The process of reading, translating, and writing characters isn't very fast (the speed is shown by a period printed on screen for each character read), but it illustrates how the function command can handle the translating chore.

If you have a programming tip that you'd like to share with our readers, put it on disk and send it to:

Programmer's Page
COMPUTE Publications
324 West Wendover Avenue, Suite 200
Greensboro, North Carolina 27408

We pay $25-$50 for each tip that we publish.

GEOS

Steve Vander Ark

Accessory Power

I love to download files from GEnie and QuantumLink. I prowl the libraries and download anything that sounds remotely interesting. While Q-Link no longer accepts uploads, there are still a lot of great programs in its libraries that are well worth the download time.

The problem is that Q-Link has removed the GEOS support area from the system, making it impossible to browse through the GEOS libraries, trolling for interesting tidbits. In order to find a file, you need to know a filename and uploader name or get lucky using the search function. I'm afraid that there are some files that I'll probably never find again, since I failed to write down the pertinent details when I first downloaded them.

I do have a copy of the last file catalog that Q-Link put out. I'm pretty clever at searching, so I'll try to help as much as possible by listing the information that you'll need to find the best programs. More often than not, though, I'll have to just list the GEnie file number, even though I know the file exists on Q-Link as well. I'm sorry about that, but I never thought Q-Link would lose its GEOS area, one of the most active areas it had. I just didn't plan ahead.

Anyway, while I was writing one of my other columns, I realized that the real secret behind GEOS's power isn't *geoWrite* or *geoPaint.* It isn't even *geoPublish,* although that program is certainly the finest example of a desktop publishing program ever created for the Commodore. No, the desk accessories are the power behind GEOS.

I'm serious. Each of those major applications is great, but each could be replaced by another Commodore program that would work pretty much as well, if not better in some cases. What links them all together are the desk accessories. Think about *Photo Manager* and *Text Manager,* for example. They provide the ability to exchange data between applications, without which there'd be no reason why your word processor and your paint program would have to be GEOS programs to be effective. But once you link the two, they become unbeatable.

There's another reason why desk accessories are so powerful: speed. You can call a desk accessory from just about anywhere, adding its power to that of the current application. The

accessory can even add capabilities that you wouldn't normally have within an application. All this power is available to you almost instantly, without your having to close one program to start another. And on the relatively slow Commodore, speed is everything.

There are plenty of desk accessories that offer accessibility and speed. The one I find to save the most time is *Mini Desk,* available on Creative Micro Design's *Collette Utilities Disk. Mini Desk* provides you with a file manager in the form of a desk accessory. It will copy, delete, or rename files for you, all from within another application.

In my travels around the networks, I've turned up a couple of other accessories that are excellent and certainly worth the download time.

One is called *FormPrint V1.5* by Dirk Lausecker. Its GEnie file number is 10302, and its documentation is file number 10303.

When I first saw the name "FormPrint" in the GEnie libraries, I figured this was a business tool to create various forms; I was wrong. *FormPrint* is sort of a miniature word processor desk accessory, a little text editor that sends each line straight to the printer. I find this program to be amazingly handy.

When you start the program, a window opens with a small text area and a few icons and menus for choosing fonts and styles. The text area is just one line, but it includes a ruler so you can keep track of where you are. When you reach the end of the line and hit Return, what you typed is printed. You can use this to print an envelope or a single label. Since it's a desk accessory, you don't even have to leave your current application to use it.

The program works very well on the 64 or the 128 (40 or 80 columns). You can choose the mode of printing: near letter quality, draft, or GEOS's own "high quality." You can also choose to use Direct Mode, with which each character is printed immediately after it is typed.

You know, this file got me to thinking that it's a miniature version of *geoWrite.* Oh, it's a far cry from being a word processor, but it has its similarities. That started me wondering if it would be possible to create a miniature desk accessory version of *geoPaint.* Imagine how nice it would be to edit bitmaps on the fly in *geoPublish.* This mini-*geoPaint* would need some basic graphics tools and certainly a pixel-edit mode, along with the usual edit-menu choices. If anybody knows of such a program, maybe he or she will pass the information along.

There's a small desk accessory called *Screen Grabber* that I often recommend as the perfect tool for *geoPublish* users. It allows you to turn any chunk of the visible screen into a bitmap, which in turn allows you to duplicate objects created with the *geoPublish* object tools. *Screen Grabber* copies that section of the screen to a bitmap which you can then paste back into *geoPublish* over and over.

Screen Grabber appeared in the January 1990 issue of *Gazette.* It is not a public domain program, but you can order the disk on which it appears for only $3.50. As a bonus, you get all the other programs from that issue of the magazine as well. You can order back issues of the disk or magazine by writing to Single Issue Sales, COMPUTE, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

GrabIt, GEnie file number 13986, is similar to *Screen Grabber,* but it isn't copyrighted. In other words, this PD file gives you all the capabilities I mentioned in the last paragraph but is available on networks and bulletin boards. If you don't have *Screen Grabber* and don't feel like tracking down a back issue of *Gazette,* look for *GrabIt* on GEnie or elsewhere.

Of course, the ultimate example of the power of desk accessories is *geoWizard.* It isn't a desk accessory really; you activate *geoWizard* with a mouse press from anywhere in GEOS. It then gives you a menu at the top of the screen which includes the option of starting another application right from where you are. In other words, you can run an application from within another, almost as if the second application were a desk accessory. If you've never seen *geoWizard* work, you're missing out. It's available from CMD, and also on the *Collette Utilities Disk.*

PD Picks

Steve Vander Ark

Fractal Draw and Xeropus

I have to admit that I've been doing a lot of rummaging for files on GEnie lately instead of QuantumLink. One of this month's programs isn't even available on Q-Link. I have to admit that it's starting to look as if GEnie is the place to go for Commodore files.

OK, now that I've said that, let me explain what I mean. There is no doubt that Q-Link is and always will be the best Commodore online environment. It has a wide range of services and support areas, chat rooms, and message bases, all specifically aimed at Commodore users. There are entire areas devoted just to Commodore graphics, for example, with libraries of utilities and beautiful artwork, a chat room called the Starving Artists' Cafe, and message areas just for answering questions about everything from conversion programs to Fun Graphics Machine. On top of that, everyone on Q-Link is using a Commodore 8-bit machine, so you won't have to deal with that smug condescending attitude from a Windows-junkie or an Amiga-phile.

There's plenty more to tempt you on Q-Link. You can use a joystick to wander around an online island called Club Caribe where you can play games or "buy" costumes or gadgets or even new heads for your little onscreen person. You can invest in stock at the island stock exchange and do lots of other cool things.

Also on Q-Link you'll find a casino called Rabbit Jack's, where you can gamble away your chips at bingo, poker, slot machines, and other games, all using Commodore graphics mode.

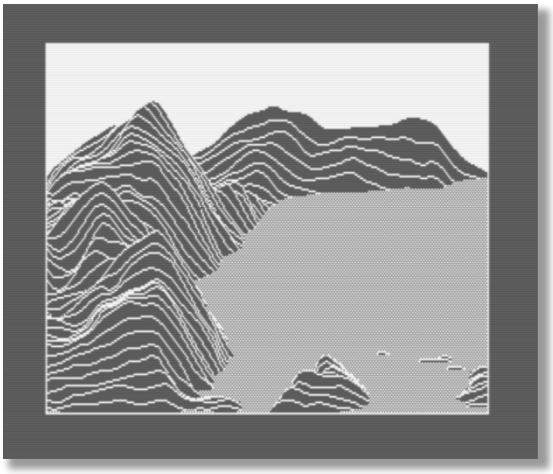
This is exciting, neat stuff, and I really wish every Commodore user could sign up and keep Q-Link alive. But, frankly, since the file libraries are frozen (no new uploads for a year now, although you can still download) and since now even the GEOS support area has been removed, I am finding it very difficult to do my research there.

Hey, I love Q-Link; I really do. And I will be logging on and playing bingo and talking GEOS and answering my E-mail and going on treasure hunts on the island until they come and take away my Q-Link disks by force. But, heck, if I can't get the latest and greatest

uploads and, as I stated in my GEOS column, can't find the GEOS files I need, then I guess I'll have to look elsewhere. That elsewhere is GEnie.

I don't know how long Q-Link will last. I certainly hope it doesn't die anytime soon, because if it does I'll lose touch with a lot of great people—unless, of course, they all head over to GEnie, too. At any rate, if you find yourself on GEnie one of these days, drop me a line. My GEnie address is S.VANDERARK. If you're a die-hard Q-Link member, send your E-mail to me there; my screen name is SteveV14. I'll be there until the end; I promise.

Anyway, while I was careening around the networks, I did manage to pick up a couple of strange and wonderful programs to put on this month's disk. The first one doesn't really do anything particularly practical, but the graphics that it creates are beautiful to behold. The other is a game, and, yes, it does involve blowing things up. I'm sorry; I can't resist a good shoot-'em-up.



Fractal Draw
GEnie file number: 10393.

If you've seen *Star Trek: The Wrath Of Kahn,* you've seen these kinds of fractals in the sequence explaining the Genesis device. They may have looked snazzier on the big screen and in color, but the process is essentially the same as what *Fractal Draw* does on a 64. These fractals create what looks like a three-dimensional landscape on the screen.

Let me back up a second here and explain that fractals are types of mathematical equations which, when plotted graphically, create fantastically elaborate patterns within patterns. Fractal images can be wonderfully intricate, so much so that fractal generators for the 64 and 128 can take hours to create their graphics.

Not so with this program, however. When you load and run Fractal Draw, you are presented with a prompt to enter a number from 1-32767 (or a 0 to end the program). For the next minute or two the program performs the calculations needed to draw the picture. Then the screen clears and the magic begins.

One line at a time, a strange but surprisingly realistic landscape appears on the screen. The image consists of peaks and hills rising out of a flat sea. The image is different for different starting numbers, so there are plenty of scenes to see.

This image is in the form of a high-resolution graphics screen. If you have a capture program or cartridge, you can save the image and load it into *Doodle* or *geoPaint* for further work. You could, for example, add color to the graphic or use it as a background for a picture you create. Unfortunately, the program itself doesn't include a Save function. Even without that, though, *Fractal Draw* is a great program just for creating interesting screen views.

Xeropus
Q-Link filename: XEROPUS; uploaded by JenniferM1.
GEnie file number 1351.

Xeropus is a shoot-'em-up game for the 64 or 128 in 64 mode. The game is similar to the arcade game called Galaxia—at least that's what the notes attached to the file on Q-Link say. I don't know about that, since I can't remember ever playing Galaxia, but I do know that *Xeropus* is a great game and lots of fun.

Your puny little spaceship is arrayed against a phalanx of grim-looking beasts accompanied by spinning stars. These assorted enemies weave and dodge and fire missiles while you valiantly try to blast them out of existence with your cannon. The sound effects and animation are excellent for a public domain game. Things really get nasty as the levels increase, too.

You can play *Xeropus* with either a joystick in port 1 or from the keyboard. There is no documentation included, but the Q-Link notes specify the following keys: left/right cursor moves your ship left, f7 moves it right, the Return key fires your cannon, and f5 pauses the game.

I discovered this game when the sysop of the Commodore Flagship on GEnie, John Brown, listed it as one of the best uploads of the week. Every week John posts a list of the best of the new files that have been added to the libraries. Occasionally, he talks up older files, like this one, that are particularly good. If you visit the Commodore area on GEnie, check out his list of programs.

Review

Nick Rossi

C64S

A Commodore emulator for IBM-compatible computers.

Are you having problems with your 64? Do you find yourself using your new PC more often because your 64 hardware is getting flaky? Then you might want to consider *C64S,* a new Commodore emulator for the PC. It offers a virtual 64 computer on your IBM compatible.

C64S v1.0 achieves nearly 100-percent emulation of the 64 at the hardware level. This means you can play all of your old games with just a PC joystick or keyboard and you can use all your old productivity software.

C64S displays the Commodore's 16-color 320 x 200 graphics on a 368 x 240 VGA screen. And with a sound card, you can experience all the original game sound and music as well. *C64S* will run just about everything. You'll need at least a 386SX running at 20 MHz, but a

cached 386DX or 486 at 40 MHz with VGA and a sound card is recommended for realtime emulation.

Once you get over the initial shock of seeing "38911 BASIC BYTES FREE" on your PC, you're free to load 64 programs from your hard drive. *C64S* uses "tape" and "disk images" to store files. A tape image contains one or more files with a "tape directory" and is loaded using device number 1, as if you were loading from your Datasette.

A disk image is actually a 175K file on your PC that contains the information in every track and sector of a 1541-formatted disk. In fact, *C64S* also emulates a 1541 to read disk images, which allows it to emulate random access, relative files, and everything else. Unfortunately, such precise emulation means that loading from disk images is just as slow as loading from a real 1541, but *C64S* can also emulate fastloaders! *C64S* can load tape-image files much faster than disk-image files, since no track-and-sector storage scheme is required.

So how do you transfer all your 64 files to your PC? *C64S* comes with a cable that connects your PC's parallel port to a 1541. Using one of *C64S's* many stand-alone utility programs, you can copy entire 1541 disks to *C64S* disk images or copy individual files to existing disk images. The same cable has a second "tail" that connects to a Commodore Datasette. Another utility program loads files from a cassette directly into your PC.

C64S supports most available sound cards. A Gravis UltraSound card is recommended because it's the only one that supports hardware filtering, and future versions of *C64S* will take advantage of this. Sound Blaster-compatible cards are also supported. SID-Player music sounds great through my Pro-Audio Spectrum card. *C64S* can play sound through the PC speaker, but the quality is low.

Because *C64S* is a Commodore 64 running under MS-DOS, the emulator can provide user menus that interrupt the emulation. When you exit these menus, you pick up right where you left off in the 64 emulation; nothing has changed. One of these menus lets you select a disk or tape image and perform file management between your PC drives and *C64S* disk images. This is the equivalent of changing floppy disks in a 1541 or putting a tape in a Datasette. Other menus include settings for joystick emulation, screen refresh rate, keyboard mapping, and printer settings (such as assigning device 4 to any LPT or COM port).

The ability to "interrupt" the 64 and return to the same place without affecting its operation allows *C64S* to become a powerful tool for those remaining Commodore 64 software developers. *C64S* comes with a 6502 assembler and debugger. You can write 6502 assembly language in a text file with the PC text editor of your choice. Assembly takes no time at all, and you can test the assembled file in the emulator using a built-in, completely transparent monitor and debugger. *C64S* greatly speeds up the software development process. I've used it to assemble and test my own 64 shareware product, and it works beautifully. In Europe, where 64 development is still widespread, *C64S* will surely catch on.

The extent of *C64S's* emulation is truly astounding. For graphics, it emulates all VIC chip graphic modes. Sprites, raster interrupts, screen scrolling, and many undocumented VIC features are available. Most 64 games and all those European demos use these features. For sound, *C64S* supports SID-chip features, including three-channel sound, ADSR envelope control, pulse-width modulation, and newly sampled original waveforms. (Remember those square waves and sawtooths you could play with just a few Pokes?)

C64S supports extensive emulation of I/O devices. It emulates the 1541 ROMs, which allows you to send CBM DOS commands, use disk buffers, and load assembly language programs into the 1541's memory. The disk-image files use either the standard or an improved GCR-coded format. About all that the *C64S's* 1541 emulation doesn't support are obscure or custom GCR formats. For tape emulation, *C64S* uses Turbo Tape to load tape images (and real tapes via the connector cable) quickly.

The eventual goal of *C64S* is to be 100 percent 64 compatible. In future versions of *C64S*, more of the PC's resources will be made available to the Commodore emulation. Your PC's extended memory can potentially be used by an emulation of a RAM Expansion Unit (1700, 1750, or 1764), and files on your hard drive could be accessed directly, making your entire hard drive available to the emulator. Future versions will support 41 kHz on-card sound synthesis and filtering with the Gravis UltraSound.

Earlier, incomplete versions of *C64S* (0.9A and 0.9B) were originally distributed as shareware products over Internet, and they did not support everything listed here. C64S v1.0 is a commercial product that supports all of the described features and comes packaged with a transfer cable, manuals, and a variety of award-winning Commodore software. A new shareware version of *C64S* is also available, but it's stripped of many features.

With *C64S,* you can enjoy the world of classic Commodore software without actually using your old 64 computer. PC users who started out on a Commodore 64 will love this nostalgic, versatile, and nearly perfect reproduction of the old computer, and die-hard 64 fans can have the best of both worlds.

Seattle Lab
214 1st St.
Kirkland, WA 98033
(206) 828-9001 (Voice)
(206) 828-9011 (Fax)
$55.00

Guide to Commodore Users Groups

Compiled by Tom Netsel

This Gazette feature provides an up-to-date list of user groups across the U.S., throughout Canada, and around the world.

To make the list easier to use and print out, it is divided into several sections of approximately equal size. The first section includes groups in states Alabama through Florida. The second includes states Georgia through Michigan. The third includes states Minnesota through Ohio. The next section includes Oklahoma through Wyoming. This latter group also includes groups in U.S. military bases abroad and user groups that meet by mail. The final article includes groups in countries outside the United States. *(These divisions are present on the disk version, but not this print version. –MS)*

If your group does not appear in this list and you wish to be included in future updates, send your club name, address, and bulletin board service telephone number (if available) to

Commodore User Group Update
COMPUTE Publications
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408.

Your group will be included in update listings in future issues of Gazette Disk. While we've made every attempt to be as accurate as possible, some information published here may need correcting. Please send any corrections to this address also.

If you're a 64 or 128 user, I urge you to join and support the group near you. Through their newsletters, software libraries, and particularly the expertise of their members, user groups are the greatest single resource available for Commodore users.

USER GROUPS—U.S.

Alabama

Birmingham Commodore Club
P.O. Box 59564
Birmingham, AL 35259-9564

Commodore Mobile Users Group
P.O. Box 9524
Mobile, AL 36691-0524

Coosa Valley Commodore Club
P.O. Box 1893
Gadsden, AL 35902-1893

H.A.C.K.S.
P.O. Box 14356
Huntsville, AL 35803
BBS# (205) 851-9827 (6 p.m.--2 a.m.)

Montgomery Area Commodore Komputer Society
606 Larkin Ln.
Montgomery, AL 36109

Scottsboro Commodore Users Group
Rt. 5, Box 255
Scottsboro, AL 35768

Alaska

Adak Computer User's Group
P.O. Box 48, NAS
FPO Seattle, WA 98791

Anchorage Commodore Users Group
Box 104615
Anchorage, AK 99510-4615

Commodore/Amiga Users Group
2597 Boulder Ave.
North Pole, AK 99705

Sitka Commodore User's Group
P.O. Box 2204
Sitka, AK 99835

Arizona

Arizona Commodore Users Group
P.O. Box 27201
Tempe, AZ 85282

Catalina Commodore Computer Club
P.O. Box 32548
Tucson, AZ 85751

Commodore Club South
P.O. Box 324
Pinson, AZ 35126

C.O.U.G.A.R
P.O. Box 21291
Scottsdale, AZ 85036

Gila Hackers
Rt. 1, Box 34
Globe, AZ 85501

MACRO
P.O. Box 5776
Glendale, AZ 85312

Prescott Area Commodore Club
c/o Al M. Hauser
648 Robinson Dr.
Prescott, AZ 86303

Valley One Twenty Eight User's Group
P.O. Box 9641
Scottsdale, AZ 85252-9641

Arkansas

Commodore Computer Club
P.O. Box 6000
Fort Smith, AR 72906

Half/DOS Will Travel
503 Kaylynn Dr.
Walnut Ridge, AR 72476

Pine Bluff Users Group, Inc.
P.O. Box 1083
Pine Bluff, AR 71613

Triple-D 64
P.O. Box 301
Reyno, AR 72462

California

FOG International
P.O. Box 1030
Dixon, CA 95620-1030

SCCUG and CHLB
2059 Cedar Ave., #11
Long Beach, CA 90806

Commodore Helpers of Long Beach
c/o Tom Hoy
3736 Myrtle Ave.
Long Beach, CA 90807

Southern California Commodore User Group
9609 Cheddar St.
Downey, CA 90242-4928

Salinas Valley User Group
15477 Del Monte Farms Rd.
Castorville, CA 95012

64/More Commodore User Group, Inc.
P.O. Box 612794
San Jose, CA 95161-2794

Association for Sharing Commodore Information
6160 Malvern Ave.
Rancho Cucamonga, CA 91701-3736

A Bakersfield Area Commodore Users Society
P.O. Box 40334
Bakersfield, CA 93384

Barstow Commodore Users Group
c/o First Congregational Church of Barstow
220 N. 2nd St.
Barstow, CA 92311

"C128 West" Commodore 128 User Group
c/o John P. Calhoun
17047 Devanah St.
Covina, CA 91722

California Area Commodore Terminal User Society
1626 N. Wilson Avenue
Upland, CA 91786-1773

CD-ROM Users Group
P.O. Box 2400
Santa Barbara CA 93120

Central Coast Commodore Users Group
3643 Lakeview Ct.
Santa Maria, CA 93455

CIVIC 64/128
P.O. Box 2442
Oxnard, CA 93034-2442

The Classic 64 Preservation Society
660 Walton Dr.
Red Bluff, CA 96080

Club-64
P.O. Box 514
Patton, CA 92369

Coastline Commodore Club
20311 Ravenwood Ln.
Huntington Beach, CA 92646

Commodore 64 West User Group
2306 W. 180 St.
Torrance, CA 90504

Commodore Connection Users Group
P.O. Box 2851
Antioch, CA 94509

Commodore Humboldt User Group
P.O. Box 6502
Eureka, CA 95502

Commodore Owners of Lake Isabella California
P.O. Box 2332
Lake Isabella, CA 93240

Commodore Systems User Network
3894 Jupiter Ave.
Lompoc, CA 93436-1904

South Bay Commodore User Group
P.O. Box 1899
Chula Vista, CA 91912

CRA Commodore Computer Club
General Dynamics Electronics Div.
P.O. Box 85310 Mail Zone 7234-A
San Diego, CA 92186-5310

Southeast San Diego Commodore User Group
258 Euclid Ave., #B
San Diego, CA 92114

Diablo Valley Commodore User Group
P.O. Box 27155
Concord, CA 94527

Fresno Commodore User Group/64UM
P.O. Box 16098
Fresno, CA 93755

Hub Area Commodore Club
P.O. Box 398
Camptonville, CA 95922

Hub Area Commodore Club
P.O. Box 398
Camptonville, CA 95922

Humbolt Commodore User's Group
P.O. Box 6502
Eureka, CA 95502

K-North
1616 Wagon Wheel Drive
Oceanside, CA
92057.MDNM/

Lake County Computer Users
P.O. Box 385
Clearlake, CA 95422.

Los Angeles County Commodore Club
5947 Reno Avenue
Temple City, CA 91780

Meeting 64/128 Users Through the Mail
155 Sienna St.
Morro Bay, CA 93442

Monterey Bay Commodore Users Group
921 Tower Place
Santa Cruz, CA 95062-4118

Mother Lode
P.O. Box 1286
San Andreas, CA 95249

Napa Valley Computer Club
P.O. Box 2324
Napa, CA 94558

Newness

Warner New Media
3500 W. Olive Ave.
Burbank, CA 91505

North Bay User's Group
P.O. Box 7156
Vallejo, CA 94590

FUNHUG
814 Valley Run
Hercules, CA 94547-14
BBS# (510) 713-7944

North Orange County
Computer Club
P.O. Box 3616
Orange, CA 92665

Oceana-64 Commodore User
Group
1004 Plover Way
Oceanside, CA 92057

Orange County Commodore
Club
1517 W. Carriage Dr.
Santa Ana, CA 92704

PETCETERA-On-The-Air
525 Crestlake Dr.
San Francisco, CA 94132

PLUG
Box 1001
Monterey, CA 93942

Sacramento Commodore
Computer Club
P.O. Box 13393
Sacramento, CA 95813-3393

San Francisco PC Users Group
3145 Geary Boulevard, #155
San Francisco, CA 94118-
3300.

The Software Palace
8978 Megan Ave.
West Hills, CA 91304

South Bay Commodore User's
Group
P.O. Box 1176
Redondo Beach, CA 90278

Southern California
Commodore Users Group
11018 E. Rosecrans Ave., Ste.
203
Norwalk, CA 90650

South Orange Commodore
Klub
25401 Champlain Rd.
Laguna Hills, CA 92653

Valley Computer Club
P.O. Box 310
Denair, CA 95316

Colorado

Colorado Commodore
Computer Club
1192 S. Nome St.
Aurora, CO 80012

Fort Collins Commodore
Computer Club
P.O. Box 2051
Ft. Collins, CO 80522

Front Range Commodore
Club,
P.O. Box 272
Niwot, CO 80544-0272

Western Slope Commodore
Users Group
3125-B Lakeside Dr.
Grand Junction, CO 81525

Connecticut

Capital Region Commodore
Computer Club
P.O. Box 2372
Vernon, CT 06066

Fairfield County C=UG
Larry Krieg
P.O. Box 212
Danbury, CT 06813

Hartford County Commodore
Users Group
c/o Gary J. Stagliano
182-J Homestead St.
Manchester, CT 06040-3042

The New London County
Commodore User's Group
57 Pond Dr.
North Stunington, CT 06359

Stamford Area Commodore
Society
P.O. Box 2122
Stamford, CT 06906

Delaware

First State Commodore Club
P.O. Box 1313
Dover, DE 19903-1313

Florida

Port Orange Commodore User
Group
5959 Riverside Dr.
Port Orange, FL 32127

Big One Group
Erick Rodriguez
4271 NW S-TAM CNL DR
205
Miami, FL 33126

Central Florida Commodore
Users' Club
P.O. Box 547326
Orlando, FL 32854-7326

Clearwater Commodore Club
Inc.
P.O. Box 11211
Clearwater, FL 34616

Commodore Computer Club
6956 Maudin Ln.
Jacksonville, FL 32244

Commodore Computer Club
of Jacksonville
141 Mango Ct.
Middleburg, FL 32068

Commodore Country Club
c/o Commodore Country
9125 U.S. 19 N
Pinellas Park, FL 34666

Commodore Milton User
Group
4356 Old Hickory Hammock
Rd.
Milton, FL 32583

Commodore User Group of
Pensacola
P.O. Box 36367
Pensacola, FL 32516

Commodore User Group of
Venice
P.O. Box 3325
Venice, FL 34293

Dinosaur 64
c/o Robbin Tate
P.O. Box 9202
Masaryktown, FL 34609-103

El-Shift-Oh Inc.
Commodore User's Group
P.O. Box 361348
Melbourne, FL 32936-1348

Fast Software of Costa Rica
Arturo Arana Garcia (1573-21)
P.O. Box 025216
Miami, FL 33102-5216

Fort Walton Beach
Commodore Users Group
P.O. Box 3
Shalimar, FL 32579

Gainesville Commodore User Group
P.O. Box 90212
Gainesville, FL 32607

G.C.U.G. Commodore Group
P.O. Box 90212
Gainsville, FL 32607

Gulfcoast 64's Commodore Users Group
P.O. Box 11180
Clearwater FL 34616

Lake/Sumter Commodore Users Group
P.O. Box 416
Leesburg, FL 34749

Manasota Commodore Users Group
P.O.Box 698
Oneco, FL 34264-0698

M.I.C.E.
11110 Bird Rd.
Miami, FL 33165

Starcom User's Group Martin County
P.O. Box 1446
Port Salerno, FL 34992

Suncoast Bytes Commodore Computer Club
P.O. Box 721
Elfers, FL 34680

Suncoast Commodore Club
P.O. Box 6628
Ozona, FL 34660-6628

Tampa Commodore Users Group
P.O. Box 271471
Tampa, FL 33688.MDNM/

Titusville Commodore Club
890 Alford St.
Titusville, FL 32796

Welaka Commodore Users Group
P.O. Box 1104
Welaka, FL 32193-1104

Georgia

Albany Commodore Amateur Computerists Users Group
P.O. Box 5461
Albany, GA 31706-5461

Stone Mountain Users Group
P.O. Box 1762
Lilburn, GA 30226

Hawaii

Commodore Hawaii Users Group
c/o M.N. Daniels
46-329 Kumoo Loop
Kaneohe, HI 96744-3532

Idaho

Banana Belt Commodore Users Group
P.O. Box 1272
Lewiston, ID 83501

PFP 64/Amiga Software Exchange
860 Sherwood #306
Boise, ID 83706

Pocatello Commodore Users Group
Rt. 2 Box 48E
Pocatello, ID 83202

Treasure Valley/Boise User Group
P.O. Box 6853
Boise, ID 83707

Illinois

American C64 Programmer League
7729 S. Michigan Ave.
Chicago, IL 60619-2314

Amiga Computer Enthusiasts
359 Miami St.
Park Forest, IL 60466-1930

Bloomington-Normal Commodore Users Group
P.O. Box 1058
Bloomington, IL 61702-1058

McHenry County Commodore Computer Club
117 Wagner Dr.
Cary, IL 60013

Com-Net
P.O. Box 484
Highwood, IL 60040

Canton Area Commodore Users Group
Box 61
Canton, IL 61520

CCR Commodore Club
P.O. Box 10022
Rockford, IL 61131-0024

Central Illinois Family Assisted Commodore Enthusiasts #19
156 Fandel Dr.
East Peoria, IL 61611

Champaign-Urbana Commodore User Group
P.O. Box 716
Champaign, IL 61824-0716

Diskoveries PD Library Club
P.O. Box 9153
Waukegan, IL 60079

Fox Valley Commodore User Group
P.O. Box 28
North Aurora, IL 60542-0028

Fox Valley 64 User Group
833 Prospect
Elgin, IL 601202

Gateway Computer Club
P.O. Box 1839
Fairview Heights, IL 62208

Jacksonville Area Commodore Users
#4 Purcell Street
P.O. Box 135
Murrayville, IL 62668

Knox Commodore Club
P.O. Box 494
Galesburg, IL 61402-0494

Meeting 64/128 Users Thru the Mail
1576B County Rd. 2350 E.
St. Joseph, IL 61873

MUGS
315 W. Madison
Girard, IL 62640

Peoria Area Commodore Users Group
2508 N. Rockwood Rd.
Peoria, IL 61604-2216

Sandwich Computer User Group
P.O. Box 23
Sandwich, IL 60548

SPUG Computer Club
P.O. Box 9035
Springfield, IL 62791

Survivors of the Sixty-Four Users Group
P.O. Box 6108
Macomb, IL 61455

S.W.R.A.P. User's Group
P.O. Box 342
Bedford Park, IL 60449

U.N.C.L.E.
533 N. 4th Ave.
Des Plaines, IL 60016

Western Illinois Programmer's User Group
Rt. 5, Box 75
Quincy, IL 62301-9314

Indiana

Anderson Computer User's Group
830 Harold Street
Anderson, IN 46013

C*H*U*G BBS and Club
P.O. Box 40745
Indianapolis, IN 46240

Kokomo Commodore Computer Club
2800 E. Baxter Rd.
Kokomo, IN 46902

Commodore Computer Club of Evansville
6500 Center Ridge Rd.
Newburgh, IN 47630

Commodore SIG F.L.A.G.
P.O. Box 1022
Crawfordsville, IN 47933

Fraternal Order of Police Computer Club
2535 Anthony Dr.
Evansville, IN 47711-2101

Logansport Computer Club
618 22nd St.
Logansport, IN 46947

Richmond Area Computer Users Group
1616 W. Main St.
Richmond, IN 47374

Iowa

Capitol Complex Commodore Computer Club
P.O. Box 212
Des Moines, IA 50301

Cedar Valley Commodore User's Group
P.O. Box 2254
Waterloo, IA 50704

Commodore Players & Users of Iowa
P.O. Box 493
Essex, IA 51638

Commodore Users Group Ames Region
P.O. Box 2302
Ames, IA 50010-2302

Commo-Hawk Commodore Users Group
P.O. Box 2724
Cedar Rapids, IA 52406-2724

Fort Dodge Commodore Users Group
c/o Patrick King
P.O. Box 479
Manson, IA 50563

Plymouth County Commodore User's Group
508 1st St. SW
Le Mars, IA 51031

Product Engineering Center Commodore Users
319 Ivanhoe Rd.
Waterloo, IA 50701

T.S.C.U.G.
P.O. Box 546
Dubuque, IA 52001

Kansas

TCCUG, Inc.
P.O. Box 8439-0439
Topeka, KS 66608

Salt City Commodore Club
P.O. Box 2644
Hutchinson, KS 67501

Kentucky

Bowling Green Commodore Users Group
P.O. Box 20214
Bowling Green, KY 42102

Commodore Owners of Owensboro KY
3807 Krystal Ln.
Owensboro, KY 42303

Commodore User's Club of Jenkins
c/o Jenkins High School
Patricia Johnson
Box 552
Jenkins, KY 41537

Glasgow Commodore Computer Club
P.O. Box 154
Glasgow, KY 42142

Louisville Users of Commodore of Kentucky
P.O. Box 19032
Louisville, KY 40219-0032
BBS# (502) 933-5397

Louisiana

ARK-LA-TEX Commodore Computer Club, Inc.
P.O. Box 6502
Shreveport, LA 71106

Baton Rouge Area
Commodore Enthusiasts
P.O. Box 1422
Baton Rouge, LA 70821

Northwest Louisiana PC Users
Group
945 Dudley Dr.
Shreveport, LA 71104-4815

PAGE Computer Users
Group, Inc.
P.O. Box 7706
Alexandria, LA 71306-7706

West Bank Users Group of
New Orleans
P.O. Box 740854
New Orleans, LA 70174-0854

Maine

Commodore Users Group of
Coastal Maine
R.R. 2, Box 3254
Bowdoinham, ME 04008

Commodore Users Society of
Penobscot
c/o 101 Crosby Hall
University of Maine at Orono
Orono, ME 04469

Southern Maine Commodore
User Group
P.O. Box 416
Scarborough, ME 04074-0416

Your Users Group
P.O. Box 1924
N. Windham, ME 04062

Maryland

Annapolis Commodore User's
Group
110 Lake View Dr.
Annapolis, MD 21403

Brooklyn Park Commodore
Users Group
c/o Don Graham
417 W. Phirne Rd.
Glen Burnie, MD 21061

Columbia Commodore User
Group
455 Joetta Dr.
Elkridge, MD 21227

Gaithersburg Commodore
User's Group
P.O. Box 2033
Gaithersburg, MD 20886

Hagerstown User's Group
953 W. Washington St.
Hagerstown, MD 21740

Hartford Commodore Users
Group
P.O. Box 209
Fallston, MD 21047

MUMPS Users' Group
1738 Elton Rd., Ste. 205
Silver Spring, MD 20903

National Institute of Standards
and Technology Commodore
Users
Group
8 Cross Ridge Ct.
Germantown, MD 20874

North Baltimore Users Group
P.O. Box 18835
Baltimore, MD 21206

Rockville Commodore Users
Group
505 Marcia Ln.
Rockville, MD 20851-1509

VIC Appreciators
14901 Donna Dr.
Silver Spring, MD 20905-4364

Westinghouse Commodore
User's Group
P.O. Box 8756
Baltimore, MD 21240

Massachusetts

Commodore User Group of
the Berkshires
c/o C.F. Hunt
38 Walden Ln.
Pittsfield, MA 01201

North East Computer U.G.
24 Pineneedle St.
Chelmsford, MA 01824

Pioneer Valley Computer Club
6 Laurel Terr.
Westfield, MA 01085

Worcester Area Com-Rades
35 Hilltop Ave.
Jefferson, MA 01522

Michigan

Battle Creek Commodore and
Amiga V. Enthusiasts
P.O. Box 2539
Battle Creek, MI 49016-2539

Bay Area Commodore Club
338 S. Sheridan Ct.
Bay City, MI 48708

Commodore Operators of
Marysville Pt. Huron
4579 Lake Shore Rd.
Fort Gratoite Turnpike
Pt. Huron, MI 48060

Computer Users of Lexington
P.O. Box 482
Lexington, MI 48450-0482

Downriver Commodore Group
P.O. Box 1277
Southgate, MI 48195

Lansing Area Commodore
Club
P.O. Box 1065
East Lansing, MI 48826

Lenawee Commodore User's
Group
210 Chestnut St.
Adrian, MI 49221

Michigan Commodore Users
Group, Inc.
P.O. Box 539
East Detroit, MI 48021

Midland Computer Club
4702 Jefferson
Midland, MI 48640

Muskegon Area Commodore
Users Group
P.O. Box 4496
Muskegon Heights, MI 49444

Saginaw Area Commodore
User's Group
P.O. Box 2393
Saginaw, MI 48605

Southwestern Michigan
Commodore Users Association
P.O. Box 306
Kalamazoo, MI 49005

Toaster Users Group of
Southeastern Michigan
26752 E. Carnegie Park Dr.
Southfield, MI 48034

Traverse Area Commodore
Club
P.O. Box 1
Rodney, MI 49342

Tri-County Computer Club
607 E. Dowland St.
Ludington, MI 49431

Upper Peninsula Commodore
Users Group
20 North Billings St.
Gwinn, MI 49841

Washtenaw Commodore Users
Group
P.O. Box 2050
Ann Arbor, MI 48106-2050

West Michigan Commodore
Users Group
1334 Riley
Hudsonville, MI 49426

Minnesota

Commodore Bemidji User
Group
4740 Sunnyside Rd. SE
Bemidji, MN 56601-8313

Minnesota Commodore Users
Association
P.O. Box 22638
Robbinsdale, MN 55422

Mississippi

Coastline Commodore
Computer Club, Inc.
P.O. Box 114
Biloxi, MS 39533

Missouri

Columbia Commodore User
P.O. Box 7633
Columbia, MO 65205

Commodore North Users
Group
SYSOP Charlie Hunsburger
P.O. Box 34534
N. Kansas City, MO 64116

Commodore User's Group of
Kansas City
P.O. Box 36034
Kansas City, MO 64111

The Commodore Users Group
of St. Louis
129 Oakey Dr., Apt. K
St. Charles, MO 63301
BBS# (314) 837-5757

Commodore User's Group of
Springfield
Box 607
Springfield, MO 65801

Heartland Users Group
P.O. Box 281
Cape Girardeau, MO 63702-
0281

Joplin Commodore Computer
User Group
422 S. Florida Ave.
Joplin, MO 64801

McDonnell Douglas
Recreational Computer Club
P.O. Box 1171 Carr Station
Florissant, MO 63031

MOARK Commodore Users
Group, H.C.
Rt. 1, Box 85
Lampe, MO 65681

The Southeast Missouri
Commodore User Group
P.O. Box 615
Farmington, MO 63640.

WORLD-WIDE C=64/128
User Group
P. O. Box 1294
Camdenton, MO 65020

Montana

Miles City 64/128 Users
Group
c/o Michael G. Sparling
700 S. Prairie
Miles City, MT 59301

Missoula Commodore User's
Group
P.O. Box 331
Missoula, MT 59806

Nebraska

Alliance Commodore
Computer Club
607 Toluca
Alliance, NE 69301

Greater Omaha Commodore
Users Group
P.O. Box 241155
Omaha, NE 68124-1155

K.A.C.C.K: Kearney Area
Commodore Computer Klub
P.O. Box 1611
Kearney, NE 68848-1611

Lincoln Commodore User's
Group
5742 Saylor
Lincoln, NE 68124

McCook Commodore Users
Group
c/o Dave Matthews
808 1/2 West 1st
McCook, NE 69001

Mid-Nebraska Users of
Computers
1920 N. Huston Ave.
Grand Island, NE 68803

Panhandle Computer User
Group
1122 Avenue L
Scottsbluff, NE 69361

Pathfinder Commodore User
Group
1817 Briarcliff Rd.
Fremont, NE 68025

Platte Valley Computer Users
Group
P.O. Box 367
Gering, NE 69341

Nevada

Clark County Commodore
Computer Club
8652 Trafalgar Dr.
Las Vegas, NV 89117

New Hampshire

Commodore Help And
Information Network
P.O. Box 654
Laconia, NH 03247

Manchester Commodore Users
Group
P.O. Box 1641
Manchester, NH 03105

Seacoast Commodore Users
Group
P.O. Box 511
Durham, NH 03824-0511

NEW JERSEY

Commodore E. Brunswick
Users Group
P.O. Box 314
East Brunswick, NJ 08816

Commodore User Group of
Central New Jersey
112 Old Bridge Rd.
Matawan, NJ 07747

Data Exchange-Beneficial
Users Group 64/128
713 Second St.
Dunellen, NJ 08812

Garden State Commodore &
MS-DOS User's Group Inc.
89 Stratford Rd.
Tinton Falls, NJ 07724

Hillsdale Commodore 64 Users
Club
32 Esplanade Lake Dr.
Hillsdale, NJ 07642

Info 64 Commodore User
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c/o Jerry Fleischer
186 Delmar Ave.
Glen Rock, NJ 07452

Morris Area Commodore User
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P.O. Box 492
Mt. Tabor, NJ 07878

Rancocas Valley Users Group
c/o G.C. Heath
806 Windsor Dr.
Cinnaminson, NJ 08077

New Mexico

Commodore Users Group of
Roswell
1619 N. Kansas
Roswell, NM 88201

Deming Commodore User's
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1400 Mallery St.
Deming, NM 88030

Los Alamos Commodore Users
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4214-A Arizona St.
Los Alamos, NM 87544

New Mexico Commodore
User Group
P.O. Box 37127
Albuquerque, NM 87176

Taos Area Commodore User's
Group
P.O. Box 5686
Taos, NM 87571

The Southern New Mexico
Commodore User's Group
P.O. Box 4437
Uni. Park Brch.
Las Cruces, NM 88003

New York

Brentwood 64/128 Computer
Club
Pub. Lib.
2nd Ave. & 4th St.
Brentwood, NY 11717

Brooklyn Commodore User's
Group
c/o Grodman
1111 Shore Pkwy.
Brooklyn, NY 11228

Bronx User's Group
P.O. Box 523
Bronx, NY 10475

Commodore Computer Club
of Syracuse
233 William St.
Minoa, NY 13116

Commodore Long Island
Club, Inc.
15 Rochelle Ct.
Amityville, NY 11701

Commodore Users Group of
Greater New York
190-25 Woodhull Ave.
Hollis, NY 11423

Commodore Users Group of
Massena
Brian Trzakos, Star Tech.
280 E. Orvis St.
Massena, NY 13662

Commodore User's Group of
Orange County
c/o Linda Vogel
10 Veteran Cir.
Monroe, NY 10950

New York Osborne User
Group
c/o Howard Herman
229 E.28th St.
New York, NY 10016-8507

Commodore Users Group of
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P.O. Box 23463
Rochester, NY 14692

Folklife Terminal Club
Box 555-R, Co-op City Station
Bronx, NY 10475

Geneva Commodore Users'
Group
25 Pine St.
Geneva, NY 14456

Hudson Valley Commodore
Club
P.O. Box 2190
Kingston, NY 12401

New York Commodore
Interest Group
St. Hilda's & St. Hugh's School
619 W. 114th St.
New York, NY 10025

Mohawk Valley Computer
User Group
c/o Wm. Nowak
3818 Stinson Ave.
Tribes Hill, NY 12177

Morrisonville Commodore
User's Group
Rt. 1, Box 61
Morrisonville, NY 12962

Northeastern New York User Group
37 S. Peru St.
Plattsburgh, NY 12901

N.C.C.C.
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Sea Cliff, NY 11579

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Box #146
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Niagara Falls, NY 14305

Oswego Commodore User Group
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State University College
Oswego, NY 13126

The Power Squad
30 Marion Place
Masapequa Park, NY 11762

Queens Commodore Users Group
P.O. Box 129
Queens, NY 11417

Rainbow Computer Users Group
c/o St. James U M Church
4661 Porter Rd.
Niagara Falls, NY 14305

Tri-City Commodore User's Group
P.O. Box 12742
Albany, NY 12212-2742

Triple Cities Commodore Society
P.O. Box 476
Binghampton, NY 13902

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Asheville, NC 28813

Baileys User Group
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Holly Springs, NC 27540

Commodore Users Group of Lincolnton
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Lincolnton, NC 28092

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Greater Onslow Commodore Users Group
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Mayodan Commodore Users Group
707 Virginia St.
Mayodan, NC 27027

Salisbury Compute
c/o Charles A. Huffman
280 Deal Creek Dr.
Salisbury, NC 28144

Sandhills Computer Club
c/o Esther Robinson
666 Seven Lakes Rd.
West End, NC 27376

Triad Commodore User's Group
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Central Dakota Commodore Club
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Bismarck, ND 58502-1584

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Akron, OH 44305-9293

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1034 Michigan Ave.
Ashtabula, OH 44004

Basic Bits Commodore Group
P.O. Box 39447
N. Ridgeville, OH 44039-0447

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North Canton, OH 44720

Chillicothe Commodore Computer Users Group
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Chillicothe, OH 45601

Cincinnati Commodore Computer Club
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Milford, OH 45150

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Columbus, OH 432208

Commodore Computer Club of Toledo
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Toledo, OH 43613-0011
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COM-NET
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Computer Erie Bay Users Group
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1117 Lavern Ave.
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Hancock User's Group
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Mahoning Valley Commodore Club
P.O. Box 1180
Youngstown, OH 44501

Northeast Ohio Computer Users Group
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Portage County Commodore Family User Group
P.O. Box 901
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Shelby Computer User Group
P.O. Box 512
Shelby, OH 44875

Trumbull Commodore Users Group
P.O. Box 8632
Warren, OH 44484

Western Cincinnati Commodore Club
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Commodore Users of Bartlesville
1920 S.W. Santa Fe
Bartlesville, OK 74003

Commodore User's Group of Lawton
P.O. Box 3392
Lawton, OK 73502
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4 p.m.-9 a.m. M-F, 24 hours on weekends; Amizone (405) 357-8698

Osage/Kay Commodore User's Group
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Stillwater, OK 74075

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Pittsburgh, PA 15236

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Lewistown, PA 17044

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Hatfield, PA 19440

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Grantville, PA 17028-0309

Castle Commodore Computer Club
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New Castle, PA 16103

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State College, PA 16801-6001

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West Branch Commodore Users Group
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Williamsport, PA 17701
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Chattanooga, TN 37412

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Knoxville, TN 37901

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South Pittsburg, TN 37380-1313

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Lubbock, TX 79413

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Moab, UT 84532

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3898 Cheryl St.
West Valley, UT 84119

Wasatch Commodore User Group
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Roy, UT
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P.O. Box 6087
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Maple Valley Commodore Users Group
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Springfield, VT 05156

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Richmond, VA 23228

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Dale City, VA 22193-9275

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Fredericksburg, VA 22404-8438

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Martinsville, VA 24112

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Lynchburg, VA 24501

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Gloucester, VA 23061

Peninsula Commodore User Group of Virginia
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Newport News, VA 23602

Peninsula Commodore Users Group
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Barhamsville, VA 23011

Peninsula Commodore User Group
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Hampton, VA 23669-2909

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Portsmouth, VA 23703

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Richmond, VA 23228

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Fairfax, VA 22038-3602

Northern Virginia Commodores
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Blue Mountain Commodore User's Group
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Walla Walla, WA 99362

Club 64
6735 Tracyton Blvd. NW
Bremerton, WA 98310

Commodore Bellingham User's Group
Bakerview Mobile Estates
505-52 W. Bakerview Rd.
Bellingham, WA 98226

Island Commodore User's Group
P.O. Box 1471
Oak Harbor, WA 98277

The Computer Club
c/o Al Kistenmacher
2476 Pell-McDonald Rd.
Chehalis, WA 98532

NW Commodore User Group
2565 Dexter N #203
Seattle, WA 98109

Olympic Peninsula User's Group
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Port Angeles, WA 98362

PSACE
1313 5th Ave. W
Seattle, WA 98119-3410

Renton Computer Group
16229 13th SW
Seattle, WA 98166

South King County Commodore User Group
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Kent, WA 98064-5241

Spokane Commodore User's Group
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Spokane, WA 99213

Tri-City Commodore Computer Club
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Richland, WA 99352-0224

University of Washington Commodore User Group
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Seattle, WA 98125

University Place Commodore Home Users Group
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Tacoma, WA 98411-1101

Tacoma Area Commodore User's Group
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Tacoma, WA 98406

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Bluefield User Group
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Bluefield, WV 24701

Commodore Home User's Group
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Wheeling, WV 26003

Mid-Ohio Valley Commodore Club
P.O. Box 2222
Parkersburg, WV 26102-2222

Wisconsin

Computer Hobbyists Involved in Personal Systems
P.O. Box 1006
West Bend, WI 53095

Lakeshore Commodore Core
519 Westwood Dr.
Sheboygan Falls, WI 53085

Madison Area Commodore Users Group
P.O. Box 1305
Madison, WI 53701-1305

Milwaukee Area Commodore Enthusiasts
P.O. Box 26216
Milwaukee, WI 53226

Racine Area Users Group
P.O. 085152
Racine, WI 53408

Wisconsin Association of Vic/C=64 Enthusiasts
1020 Kurtis Dr.
Elm Grove, WI 53122

Wyoming

Casper Commodore Users Group
c/o Crazy Mountain Software
511 E. 2nd St.
Casper, WY 82601

Cheyenne Association of Computer Enthusiasts
P.O. Box 1733
Cheyenne, WY 82003-1733

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Commodore Computer Users Group-Heidelberg
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Albury-Wodonga Commodore User Group
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Albury NSW 2640

Plus4/C16 User Group
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Blaxland NSW 2774
(Postal Club)

Sydcom User Group
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Sydney NWS 2001

Tuggerah Lakes Commodore User Group
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Toukley NSW 2259

Wollongong 64/128 Club
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Unanberra NSW 2526

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Dovetom Vic 3177

Melbourne Commodore Computer Club
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Shepparton Commodore Computer Club
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Waverley 64/128/Amiga User Group
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Chadstone Vic 3148

Yarra Valley Commodore User Group
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Chilliwack Community
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Commodore Computer
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West Vancouver, British
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Canada V7B 3N6

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North American Commodore
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5334 Yonge St., Ste. 116
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C.L.I.C.Q.
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Commodore 64 De L'Estrie
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Colombia

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Independent Commodore
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Apna Ghar Housing Society
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Club Commodore de Juarez
Calle del Manantial #1448
Ciudad Juarez
Chihuahua, Mexico 32500
BBS#s 011-52-16-17-3130; El
Paso, TX (915) 544-5549

Club de Usuarios Commodore
de Chihauhua (CUCC)
R. Calderon #801, Chihuahua
Chihuahua, Mexico 31240
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011-52-14-13-12-91

Netherlands

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Hobby Commodore Club
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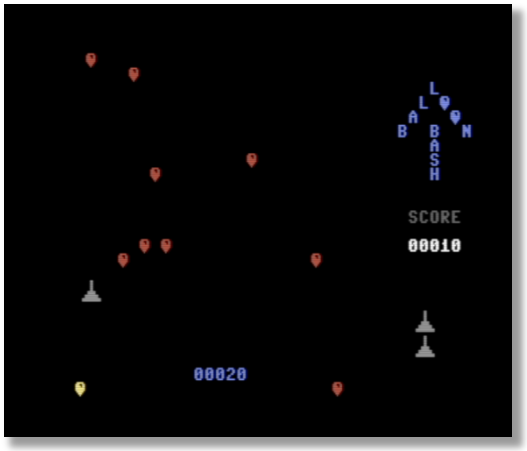
Programs

Balloon Bash

Joseph Sheppard



An arcade-style game for the 64.

There's something satisfying about popping a balloon, and with this arcade-style game for the 64, you can have a bash. Don't be confused about the title, though; this game can be frustrating as well.

At the simplest level, you are required to pop as many balloons as you can with your horizontal-scrolling pin. You control the pin by using a joystick in port 2. Balloons of five different colors fall at random and at different speeds.

The balloons that fall the fastest are worth the most points. Red balloons are worth 10 points, yellow balloons are worth 20, purple are worth 30, blue are worth 40, and green balloons are worth 50 points apiece.

To earn big points, however, you should take advantage of the Happy Color and Three-in-a-Row systems. The Happy Color is the color of the balloon resting in the bottom left of your screen. Its color will change every time you pop a balloon. Happy Colors are worth five times the normal values of a balloon.

The Three-in-a-Row is as its name implies. Pop three balloons of the same color in a row and you earn 500 points.

Since the balloons fall in a random manner, the only real hope of earning the high points is to use your secret weapon. By pushing the fire button, your pin will change from its normal pointed state to a flat surface capable of bouncing balloons a third of the way back up the screen. You may bounce as many balloons as you can handle.

The game is not without its danger to you as the player. You can let two balloons get by you with no penalty, but if you miss a third, you lose your pin. You have three pins at the start of each game, and each pin has this three-balloon limit.

Remaining pins are indicated at the bottom right of the screen. Current score, high score, and Three-in-a-Row counter are also displayed. There is no way to earn new pins, so guard them carefully.

Joseph Sheppard lives in West Fork, Arkansas.

Exponents

Robert Quinn

An entertaining program for the 64 to help you learn the mathematical rules of exponents.

Exponents is a BASIC program for the 64 that will help anyone learn the mathematical rules of exponentiation. By providing demonstrations and solving problems onscreen, this program effectively demonstrates the general rules of exponents—and it does it with style!

I won't go into an explanation of exponents in this article; that's the program's job. Suffice it to say that an exponent is a symbol or number placed above and after another symbol or number to denote the power to which that second number is raised. Thus, an 8 with a smaller 3 above it and to the right means that the base number of 8 is raised to the third power. How you multiply and divide positive and negative exponents is what this program teaches.

Definitions

At the top of the screen you'll see a menu from which to select definitions and demonstrations. You can use either the keyboard or a joystick in port 2 to move the cursor. After you've moved the cursor to make a selection, press either the space bar or the joystick's fire button. You can also move the cursor by using the Ctrl key and the left-arrow button above that key. The keyboard cursor keys are not operative.

If you select one of the numbers in the first column (1-6), you will be presented with an animated definition of that function. Functions covered include Positive Elements, Multiplication and Division; Negative Exponents, Multiplication and Division; and Roots.

Problem Solving

After you've been through the demonstrations a few times, you can test your understanding of the process by selecting one of the letters next to the number column (Q, W, E, T). Once again, either press that letter or cursor to it. You will be presented with a problem and asked to supply the answer. After you answer, follow the screen prompts to press either the space

bar or the fire button. The program will then show you in an animated fashion how to solve the problem. You can then see if your answer was correct or not.

If you are new to exponents or haven't studied them in years, you'll be surprised at how easily and effectively this program explains the subject with animation, demonstration, and a minimum of text.

Robert Quinn lives in Kooringal, Wagga Wagga, New South Wales, Australia.

Sunday Driver

Maruice Yanney

An arcade-style driving game for the 64.

Enjoy a nice leisurely Sunday drive through the country, or race down the highway in this automobile simulation. Avoiding obstacles and rushing to reach mileage goals will provide excitement on the trip. See how far you can travel in this action game for the Commodore 64.

Sunday Driver is written entirely in machine language, but it loads and runs like a BASIC program. The screen is divided into three main areas.

Playing The Game

Sunday Driver lets you operate a high-powered, dark blue sports car. A joystick, in either port, or the keyboard is used to steer the sports car. Moving the joystick forward or pressing the I key accelerates the car, while moving the joystick backward or pressing the M key slows the car. Steering left and right is accomplished either by moving the joystick left or right or by pressing the J or K keys. The cruise control toggles on and off by pressing the joystick button or the space bar. The car must be going at least 35 mph before you can activate the cruise control. Braking will automatically turn off the cruise control.

The top of the screen contains the garage (where your extra cars are stored) and a display of the cash value remaining on the current car. The middle portion (the vast majority) of the screen contains the playing area, which consists of the roadway and countryside. The right side of the screen contains a display of the current game conditions and the race car status.

Your car status includes fuel, time, mileage, and speed. The amount of fuel remaining is indicated by a moving bar. The tank is full when the bar is beneath the full indicator (F). As the tank empties, the bar shortens, approaching the empty indicator (E). Below the fuel gauge is the time of the trip (the current game). Below that is the mileage for the trip. At the very bottom of the screen is your speedometer. If the cruise control is on, an indicator appears to the left of the speedometer.

Object

The object of the game is to see how far your fleet of cars can go before the cars wear out. You begin with three cars, two of which remain in the garage until needed. Each car has an initial cash value of $10,000. Hitting obstacles or being caught while speeding reduce the cash value of the car. Running out of gas and refueling also cost you. The cash position is increased every 50 miles as well as when performance incentives are reached.

Obstacles

Several obstacles will decrease your cash unless you manage to avoid them. Avoid other cars, the police helicopter, deer, and traffic signs. You should also keep off the grass. Crashing into one of these obstacles results in damage to your car (loss of cash) and a reduction in speed. The damage and speed reduction occur while the car remains in contact with these objects.

In addition to avoiding a crash with the low-flying police helicopter, you must adhere to the speed limit while the race car is in the vicinity of a helicopter. Various speed limits appear along the road. Speed limits vary from 25 miles per hour up to no limit. Be alert because the speed limit can change quickly and dramatically. If you speed, the police helicopter will pursue you until it is close enough to stop your car and give you a substantial fine and time penalty. Cars that obey the speed limit are not pursued by the police helicopter.

Other difficulties can be caused by the condition of the road. Oil spots and long patches of ice make steering difficult, particularly at higher speeds. The road also widens, narrows, and veers to the left and right. Watch the oncoming signs; they will help indicate some of the road conditions.

As you drive, you will need to stop for fuel every so often, more so when you are traveling at high speeds. Gas stations appear every 40 to 100 miles. Signs appear about 10 miles before each station. The gas sign will also show how far it is to the next station, in case you want to try going farther before refueling. To refuel the car, drive onto the white fuel line and stop. Running out of fuel results in a time penalty and a charge for gas and towing.

Cash

The cash value of the race car decreases for driving infractions. A crash into another race car, the police helicopter, a deer, or a sign results in a loss of a minimum of $500. A more severe crash (one lasting longer) costs substantially more than a minor bump.

Driving on the grass can also be costly, with a charge of at least $50 for the slightest contact. Speeding results in a fine of $500 and $20 for each mile over the speed limit. There is a maximum speeding fine of $2,500.

Running out of gas costs you a tow to the next open gas station. This can cost anywhere from $1,250 to $2,500. Fuel is not as cheap as it used to be; a full tank costs a little over $100.

You can increase the cash in two ways. Each 50 miles you earn $2,500. Cash bonuses are also awarded for reaching performance goals. The performance goals appear in white on the message line (the line beneath the garage and cash boxes). When the time shown in the performance goal reachs 0, you may earn a bonus. If the mileage driven in the time period meets or exceeds the goal, a bonus of several thousand dollars is awarded. Exceeding the goal

by a large amount results in a larger bonus. Take care in trying to reach the performance bonus because high speed results in more accidents!

If the cash value reaches $20,000, a car is added to the garage, and your cash is decreased by $10,000. You begin with three cars, the one in use and two in the garage. When the cash value of a car falls below 0, it is scrapped, and one from the garage is put into play. If no more cars are in the garage, the game is over.

You can pause the game by holding down the Shift key or by pressing the Shift Lock key. To continue playing, release the Shift key or press the Shift Lock key again.

Maurice Yanney is a frequent contributor. He lives in Lebanon, Pennsylvania.

Friendly Errors

Cameron Kaiser

A programming utility for the 64.

Friendly error sounds like a contradiction in terms, doesn't it? But with *Friendly Errors* (FE) installed, programming errors actually become friendlier! FE, a patch that forks into the normal BASIC error routine, gives advice and a better explanation of errors when they appear, helping you to debug and root out the problem.

FE consists of two parts, a BASIC loader (FRIENDLY ERRORS) and a machine language portion (FE.ML). To install FE, simply load and run the loader. It will load FE.ML and, after protecting FE from BASIC, install it for you. It will give you the SYS calls for disabling and enabling FE and then quit, leaving itself in memory. You can enter NEW if you want to get rid of it.

To see what FE can do, try entering this command in immediate mode.

```
PRONT "HI"
```

FE responds with the following.

```
MISSING PARENTHESIS? MISSPELLING??
?SYNTAX  ERROR
READY.
```

Now enter this line.

GET A$

FE's response would be this.

```
THAT COMMAND MUST BE IN A PROGRAM.
?ILLEGAL DIRECT  ERROR
READY.
```

Each of the 64's 30 error messages has a matching explanation in FE's database. By giving you both the explanation and the native error, FE can also be a teaching tool by helping you understand just what those errors mean.

While FE is aimed at the beginning BASIC programmer, it can be a help to more experienced programmers by pointing out the most common causes of errors and ways to correct them.

For example, enter this command.

```
PRINT 1E+99
```

Instead of simply printing ?OVERFLOW ERROR, FE gives additional information.

```
CALCULATIONS MUST BE UNDER 1E+99.
?OVERFLOW  ERROR
READY.
```

Or, if you keep getting a mystifying ?CAN'T CONTINUE message, FE might alert you to the fact that YOU CAN'T CONT AFTER MODIFYING.

You might note that FE always switches to lowercase mode to display its error messages. This should not interfere with most applications, but if it does, simply enter POKE 39990,0. (Note that we've printed the messages in this article in uppercase in order to make them stand out easier.)

Note also that the disable/enable SYSs must be done from direct mode. Entering them from within a program causes that program to halt, although the program itself will be unaffected.

For your reference, SYS 40073 reenables FE, and SYS 40088 restores the previous error driver. Note that BASIC extensions may be adversely affected while FE runs. For certain utilities it may be wiser to keep FE off and turn it on only for critical portions of your program. FE was designed with compatibility in mind, however, so conflicts should be rare.

Cameron Kaiser is a freshman at the University of California at San Diego majoring in linguistics and premed. He is a longtime programmer and manages his own Commodore software enterprise, Computer Workshops. He lives in La Mesa, California.

Faster BASIC

Ligia Latina

Use this BASIC interpreter for the 64 to run programs up to seven times faster.

A compiler is one of the best utilities available to BASIC programmers, but it also has disadvantages. Interactivity is lost: You usually have to save your program to disk and then wait for the compiler to work on it. But perhaps the biggest inconvenience is when you try to run your compiled program and it doesn't work as you expected; you are then on your own wondering how to find the errors.

Faster Basic isn't a compiler—it's an interpreter—and it won't speed up your programs as much as a compiler would. Interpreters are inherently much slower than compilers. In exchange for its slower speed, you get the same interactivity as with Commodore BASIC, and when you run your programs, *Faster Basic* will be constantly on the lookout for errors and will break out and report any as Commodore BASIC does. In fact, the program behaves so much like Commodore BASIC that sometimes you remember it's there only because your programs run faster.

Load *Faster Basic* as a normal BASIC program. If you list it, you will see just one line: 0 SYS2061. Do not type RUN yet. First enter this line in direct mode and notice how long the Commodore interpreter takes to fill the screen with asterisks.

```
FOR X=1024 TO 2023:POKEX,42:NEXT
```

Now clear the screen, type RUN to activate Faster Basic, and enter the same line again to see how much faster it executes with Faster Basic active.

There are also three short demo programs on the disk. Try running, without *Faster Basic* activated, the programs *Demo, Quilt,* and *Tunnels.* Then activate *Faster Basic* and run the programs *Demo.T, Quilt.T,* and *Tunnels.T* to see the difference.

When you activate *Faster Basic,* the program moves down the top of memory pointer ($37/$38) to $8000, relocates itself at $8000, and performs a NEW. You are now free to start writing your programs. Faster Basic isn't compatible with Commodore BASIC programs. If you load and try to edit a program that was written using the Commodore interpreter, the computer will crash. You must write your programs from scratch with *Faster Basic* present, and Faster Basic must be present every time you load a program created with *Faster Basic* to run it or edit it. It's a good idea to keep your programs created with Faster Basic on a separate disk and also to use an extension when saving, such as SAVE "TUNNELS.T",8 or SAVE "QUILT.T",8.

Differences between normal 64 BASIC and *Faster Basic*:

Faster Basic supports only integer numbers from -8388607 to + 8388607.

Faster Basic supports only one-dimensional arrays.

The integer variable symbol (%) isn't allowed; neither is the decimal point (.) nor the exponential E.

The following commands and functions aren't supported.

```
INPUT#  ON      WAIT    DEF     PRINT#  CMD     OPEN    CLOSE   TAB(
FN      SPC(    NOT     ^       SQR     LOG     EXP     COS     SIN
TAN     ATN
```

The reserved words ST, TI, and TI$ aren't supported.

The command FOR doesn't check the stack for duplicate variable names. This means that you'll never get out of a nested loop like the following.

```
FORX=1TO10:FORX=1TO5:NEXT:NEXT
```

You must be careful not to use nested loops with duplicate variable names.

You can use arrays with the FOR command, but note that the expression inside the parentheses is evaluated only once when the loop is entered.

```
FORA(N-1)=1TO100:NEXT
   ^OK.
```

To speed up the NEXT command, no variable name is allowed.

RETURN doesn't discard any FOR parameters from the stack. This means that the following (poorly written) program will not work.

```
100 GOSUB 1000:END
1000 FORX=1TO10:RETURN
                ^ Will give ?RETURN WITHOUT GOSUB ERROR
```

DATA statements must be alone in a line, and aside from spaces, the DATA token must be the first thing on the line. Otherwise, it will be ignored by READ. Any other statement after the first DATA will cause a ?SYNTAX ERROR.

```
100 :DATA "HOUSE","ELEPHANT","MICE"
  ^this line will be ignored by READ just because of the colon.

110 DATA 10,10,10:PRINTX
          ^this statement will cause a ?SYNTAX ERROR

120 DATA 55:DATA 23
      ^item.
```

DATA items must be either numeric or string. Strings must always be enclosed in quotes.

```
130 DATA "REDWOOD","FOREST","SQUIRREL"
    ^ OK.

140 DATA PINE,TIMBER,BARREL
    ^will cause a ?SYNTAX ERROR. (No quotes)

150 DATA "53","27","18"
     ^OK, but can only be read by a string variable.
```

INPUT: Each INPUT statement can assign input to just one string variable. In addition, all characters, except leading and trailing spaces, are assigned to the variable. This includes commas, colons, and quotes.

RND: The RND function always returns an integer number ranging from -8388608 to +8388607. Faster Basic gets its random numbers from voice 3 of the SID chip.

MID$: This string function has two forms in Commodore BASIC; MID$(A$,X) and MID$(A$,X,N). Only the latter form is supported by Faster Basic.

ASC: In Commodore BASIC, using this function on a null ("") string results in an error. This doesn't occur in Faster Basic. Instead, a value of 0 is returned.

GET: The GET statement can be followed only by a string variable.

DIM: Only one dimension is allowed for arrays. The expressions inside parentheses may not contain any arrays.

```
DIM A(N+1),A$(2*W-4*X1),C(50),X,Y,Z
^OK.

DIM TW(N+A(2)-4)
     ^will cause a ?SYNTAX ERROR.
```

RUN: No line number is allowed. If you need to start at line n, use CLR:GOTO n instead of RUN.

PRINT: Everything must be separated by either commas or semicolons.

```
PRINT CHR$(147);CHR$(5)
        ^OK.

PRINT A$B$C$D$E$
    ^will cause a ?SYNTAX ERROR

PRINT CHR$(147)CHR$(5)
        ^item.
```

SYS: Only a number is allowed.

LOAD: Can be used within a program, but no variables will be passed. It works as if you had first pressed STOP and then entered NEW, then LOAD, and then RUN when a program was running.

IF: Must always be used with THEN.

```
    IF----THEN 100          [OK.]
    IF----THEN GOTO 100     [OK.]
    IF----THEN GO TO 100    [OK.]
    IF----THEN GOSUB 100    [OK.]
    IF----THEN X=1          [OK.]
    IF----THEN LET X=1      [OK.]

    IF----GOTO
     ^not allowed.
    IF----GO TO
     ^not allowed.
```

If you try to enter a line that contains something that doesn't make sense to Faster Basic (like for instance a missing parenthesis), Faster Basic will give you a ?SYNTAX ERROR and won't accept that line until you correct the error.

Numeric functions with dummy arguments, POS(d), FRE(d), and RND(d), will accept only numeric arguments and will give a ?TYPE MISMATCH error if you use a string as an argument.

Strings have a maximum length of 252 characters because three bytes are used for a garbage collect pointer when the string is stored high in RAM.

Garbage collects can take a long time in Commodore BASIC. Faster Basic's garbage collects take only a fraction of a second. Not only the function FRE causes a garbage collect but also the command DIMension.

Faster Basic is compatible with Turbo Disk and the DOS 5.1 wedge (except with the DOS command "^" [LOAD/RUN]).

Here are some hints to make Faster Basic run even faster.

There are several differences with Commodore BASIC:

Numbers are evaluated faster than variables, and variables are evaluated faster than arrays. Try to use numbers whenever possible; if numbers aren't possible, try to use nonarray variables.

The length of variable names doesn't affect speed in any way. Faster Basic uses only the first two characters and discards the rest.

Programs don't need to be crunched because the converter/tokenizer routines discard spaces anyway.

Loops in a single line execute faster than those spread over several lines.

REMarks do slow the program slightly.

If a program has a long list of DATA statements, it will start running sooner if you put all the data at the end and put an END or STOP before the start of the data.

Miscellaneous

GOTO and GOSUB shouldn't be used in direct mode: Use CLR:GOTO and CLR:GOSUB instead.

Comments

I recently found *Faster Basic* to be particularly nice for integer "number crunching." I was trying to find if very large numbers were prime and if so, what the factors were. I wrote a small BASIC program—maybe 10 or 15 lines long—and after I crunched it and did all I could to make it run as fast as possible, it was still running too slow. After I rewrote it for Faster Basic, it performed about four times as fast as the crunched 64 BASIC version.

Ligia Latina lives in San Jose, California.

File Copier

Ross Ouwinga

A disk utility for the 64

This handy disk utility does more than just back up files; it also scratches, renames, formats, and validates. It's especially helpful for making copies of *Gazette Disk* programs and saving them to your work disks.

When you find yourself loading and listing 50 (or more) disk directories just to find one program, you know it's time to start putting your disks in some sort of order. But copying programs takes a lot of time, especially if you have to load and save programs one at a time to transfer them from one disk to another. There are much more interesting things to do with your computer than loading and saving. It gets worse if you have sequential files rather than program files. *Fast File Copier* makes it easier to make single or multiple backups, eliminating much of the burden of disk organization.

Fast File Copier displays all the files in the directory; you select any or all of them by merely moving the cursor around the screen. The program loads as many files as possible into memory, prompts you to insert a destination disk, and then saves the programs or files to the backup disk. If all files fit in memory the first time around, you're done. Otherwise, follow the prompts until the entire procedure is completed. There's no need to remember the names of the files or how to spell them, and you don't even have to know what type of file it is or where it's located. Fast File Copier handles everything for you. And it does more than just copying--it also deletes selected files, renames files, and validates or formats disks.

Getting Started

To use the program, enter LOAD "FILE COPIER",8 (on a 128, first go to 64 mode). Then type RUN and press Return. The title screen will appear and prompt you to insert the source disk. Press any key when you're ready to get started. The next thing you should see is the directory, unless there are no files on the disk or the disk is unformatted. In these cases, the type of problem will be displayed, and you'll be allowed to quit, insert another disk, or format the disk.

The directory screen makes this program easy to use. At the top of the screen is the menu of the options you can use. Below this menu you'll see the disk directory split into two columns. Up to 32 titles may be displayed on this screen at a time. If there are more than 32 files on the disk, press f7 and the next page of titles will be displayed. To return to the previous page, press f5. There may be several pages since the directory has room for as many as 144 files on a disk.

If you look closely at the listing of titles, you may notice that some of the titles have a comma and the letter "S," "U," or "R" after the filename. This indicates that a file is a sequential, user, or relative type. Program files are unmarked. This feature is only for your reference; it doesn't affect how you use any of the functions in this program. Don't bother trying to copy relative files. They're considerably different from other types of files and cannot be copied with the techniques used by the *Fast File Copier.*

The only other unusual item that may appear in the directory is a title with a large dot at the end. This indicates that the file is unclosed (also called a "splat" file), and you won't be

allowed to delete or copy it. If an unclosed file appears on a disk, you should eliminate it by validating the disk. If you don't eliminate an unclosed file, serious problems may result in the directory. To validate the disk, press f2.

Copying Files

Before copying a file, you must mark it so the *Fast File Copier* knows which one to copy. Using the cursor keys, move the X-shaped cursor in front of the file to be copied. When the cursor is positioned in front of the desired title, press the space bar—the title will be changed to reverse characters. If you change your mind, press the space bar again and the title will return to normal. To copy more than one program, move the cursor to the next desired title and press the space bar. There is no limit on how many titles you may select. You may even switch to other pages if necessary. All titles displayed with reverse characters will be copied. When you've made your selections, press f1 to start the copying procedure.

The copy routine begins with a prompt to make sure you are ready. If you change your mind, press f1 again and you return to the directory. Press any other key to begin copying. The program begins with the first title in the directory and checks whether you selected it. If you didn't select it, the program will skip to the next one, and so on, until it finds one to copy. It then checks whether the file will fit into the available memory. If there is sufficient space, the file is loaded.

The program continues to check each of the selected files and loads them as long as there is room in memory. If a file is too big to be loaded, it is skipped until the next pass. After as many files as possible have been loaded into memory, you are prompted to insert the destination disk and press a key when you're ready. Again, if you change your mind, press f1 to abort the backup. If your sound is turned up, you'll hear a chime to let you know that the program is waiting for you to switch disks.

After all the files are saved, the program checks to see whether there were any files that were not loaded on the first pass. If no more files are to be copied, you will be asked if you want to copy the same files again to another disk, to begin work on another disk, or to quit the program altogether.

A maximum of 49,664 bytes (about 48K) of RAM is available for copying. This works out to 194 blocks. Files larger than this cannot be copied by this program. The amount of memory available varies slightly, depending on how many titles are on the disk. All memory between 2047 ($07FF) and 53248 ($D000) is used for storage of loaded programs.

The disk drive status message is displayed each time after the drive has been accessed. This is handy information if there is a problem copying any of the files.

Fast File Copier is written so that fast-load cartridges such as Fast Load from Epyx may be used while copying. This will speed up the loading of the files, but it will not speed up the saving of the files. (Sorry, *TurboDisk* will not work in conjunction with this program.)

Scratching Files

An important feature that is necessary after copying files is the ability to delete them from the source disk when they're no longer needed. With the *Fast File Copier*, this is as easy to do as copying files. Merely mark the files you want to delete and press f3.

There are two ways to proceed from this point. If you want all the marked files to be deleted automatically, press the A key. If you're not too sure of yourself, press the V key. This is a verify option that will stop at each title and ask you if you are sure you want the file deleted. If you want the file deleted, press the Y key. If you don't want it deleted, press the N key; the program will skip to the next title. When all the selected files are deleted, you'll be asked to press any key to continue. You may insert another disk at this time or keep the present disk in the drive. Press a key, and the directory of the disk will be loaded and displayed; then you may continue again with any of the options shown on the directory screen.

Renaming Files

It is sometimes desirable to change the names of certain files after transferring them to another disk. This is done much the same way as copying or deleting files. First, mark all the titles you would like to rename and press f4. The old name of each file is displayed, and you are asked to type in a new name. If you press Return without typing anything else, the file won't be renamed. The new name may be only 16 characters long. If more than 16 characters are typed in, only the first 16 will be used.

Formatting And Validating

Formatting and validating a disk is straightforward. You are asked to type in a disk name and ID before formatting. Remember that formatting erases everything on the disk, so be careful with this function. Validating only requires you to type any key when you're sure you're ready. Both functions will allow you to abort by pressing f1.

When you've finished using *Fast File Copier,* you may return to BASIC by pressing Q. Quitting this way is much the same as pressing Run/Stop-Restore, except the screen is cleared and the colors are changed back to normal.

Fractal Draw

Paul Carlson

Fractal Draw is one of the programs featured in this issue's "PD Picks."

Follow the onscreen prompts to create images that appear to be three-dimensional landscapes. All you have to do is enter a number from 1-32767.

For the next minute or two the program performs the calculations needed to create the picture. Then the screen clears and the magic begins.

Xeropus

Andrew Trott

Xeropus is a PD program that has no documentation included. For more information about the program, see "PD Picks" on this disk.

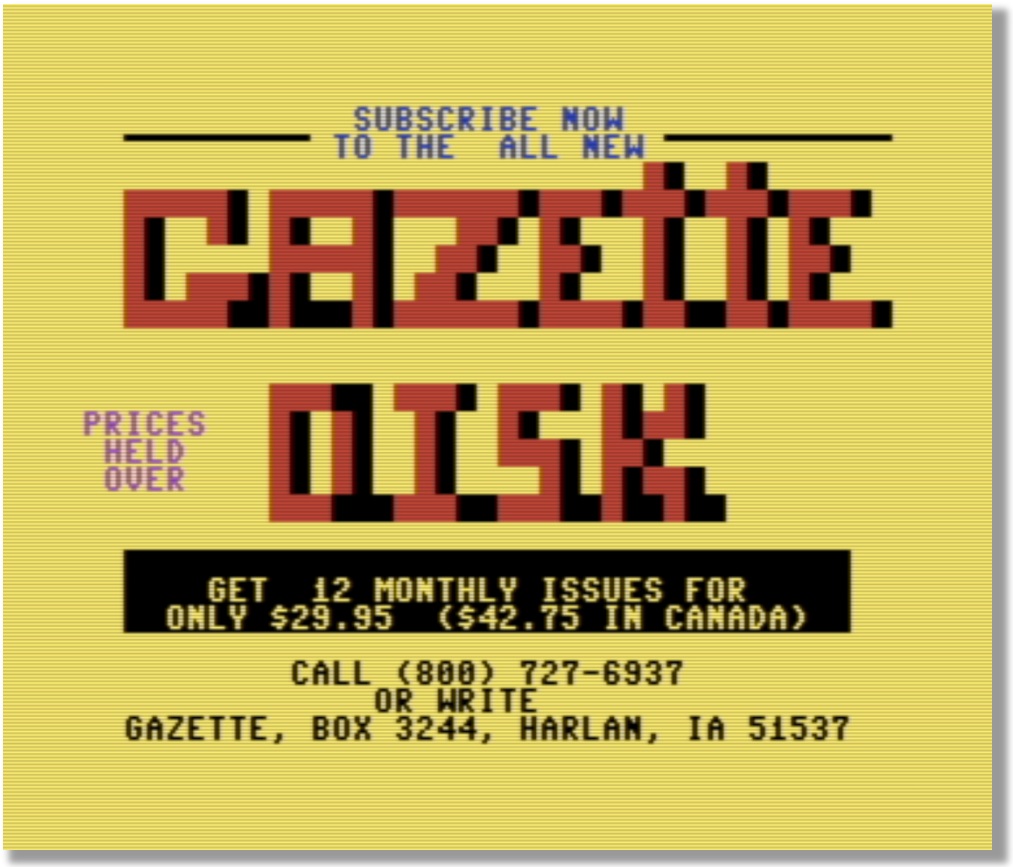
You can play *Xeropus* with either a joystick in port 1 or from the keyboard.

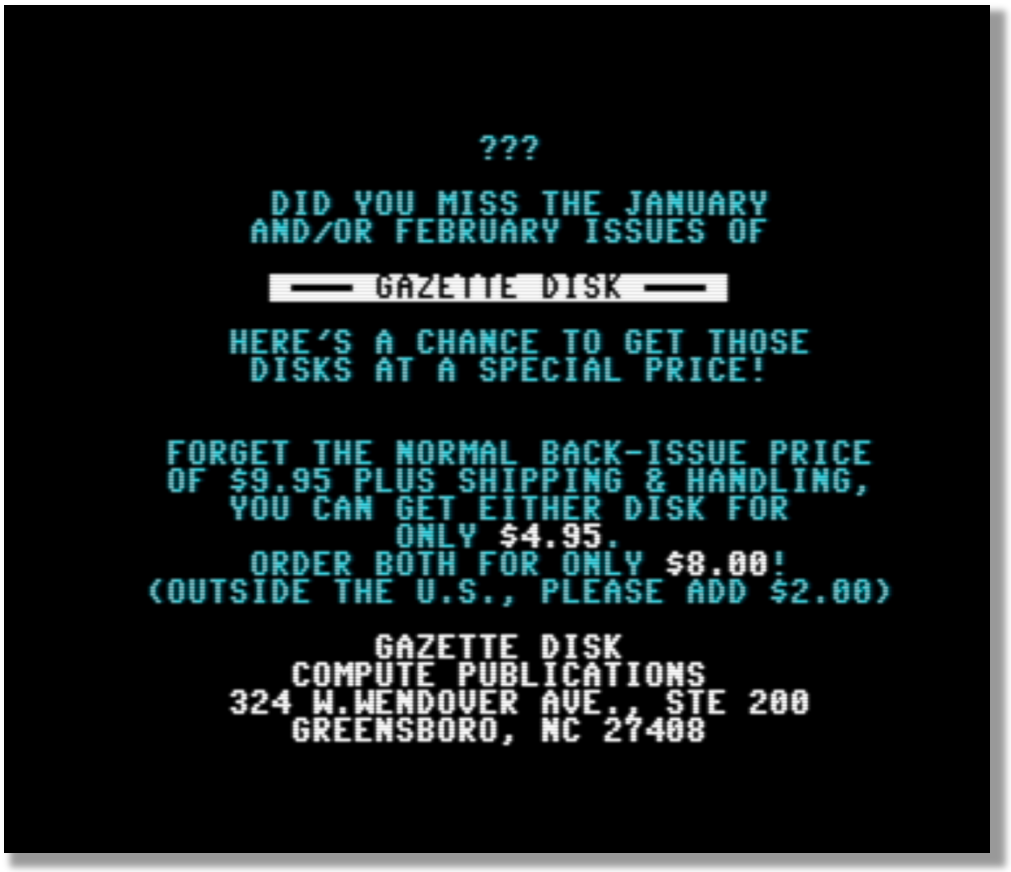
Use the left/right cursor key to move your ship left. Use f7 to move it to the right. Press Return to fire.

Press f5 to pause the game.

The *Gazette* menu program requires XEROPUS.BOOT to load and run this machine language game. You can load and run the program from the READY prompt by typing LOAD"XEROPUS",8,1 and pressing Return.

*(*Xeropus *is a "crack" of* Xerons. *This game was originally programmed by Andrew Trott, and published by Supersoft in 1983, and therefore not public domain. –MS)*




???
DID YOU MISS THE JANUARY
AND/OR FEBRUARY ISSUES OF
GAZETTE DISK
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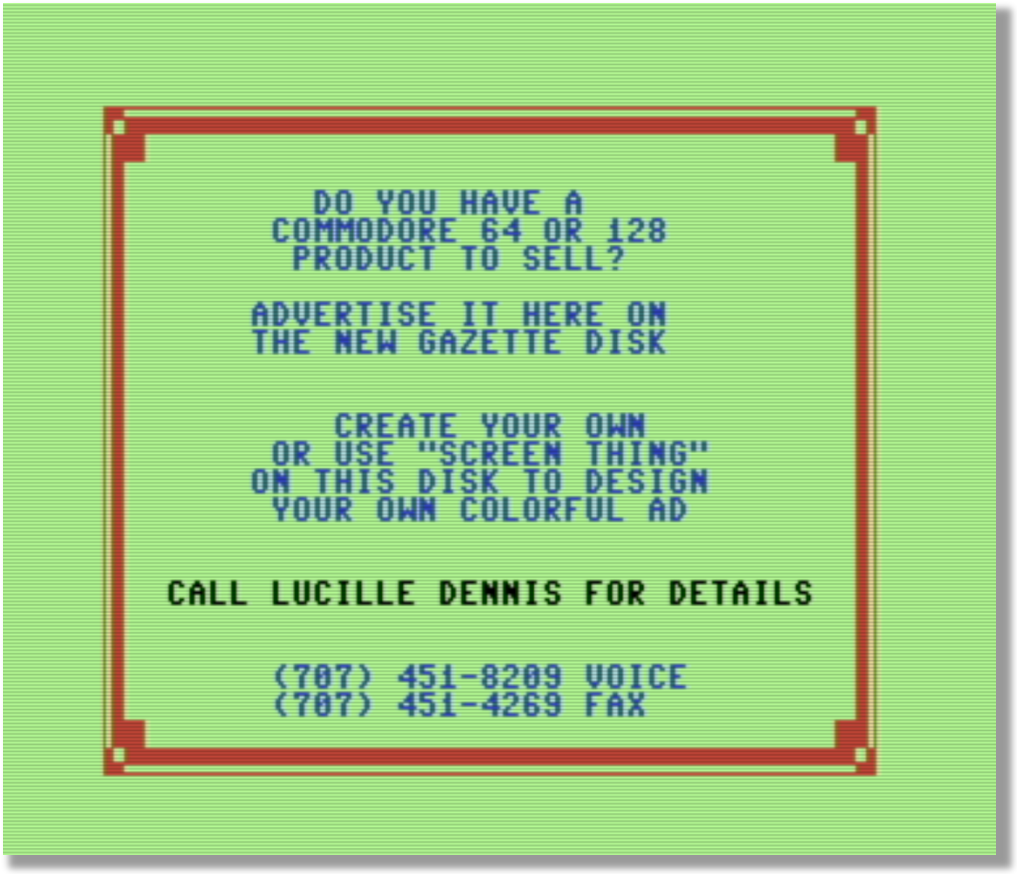
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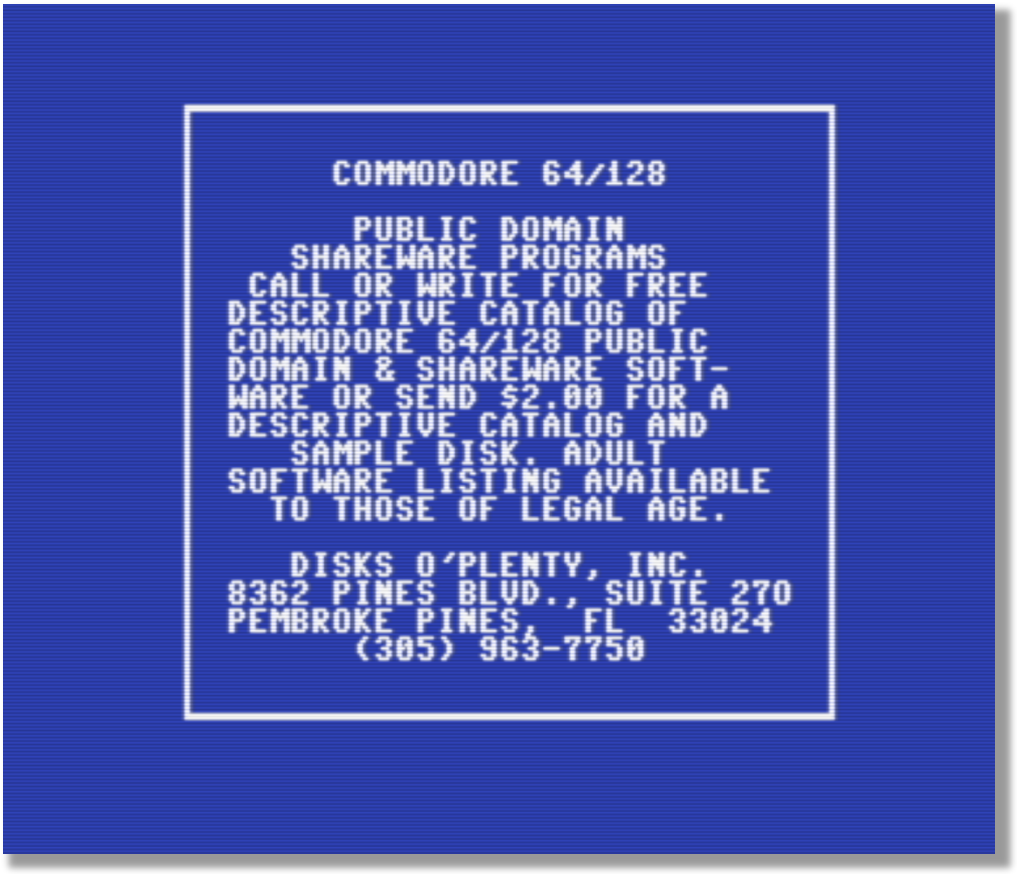
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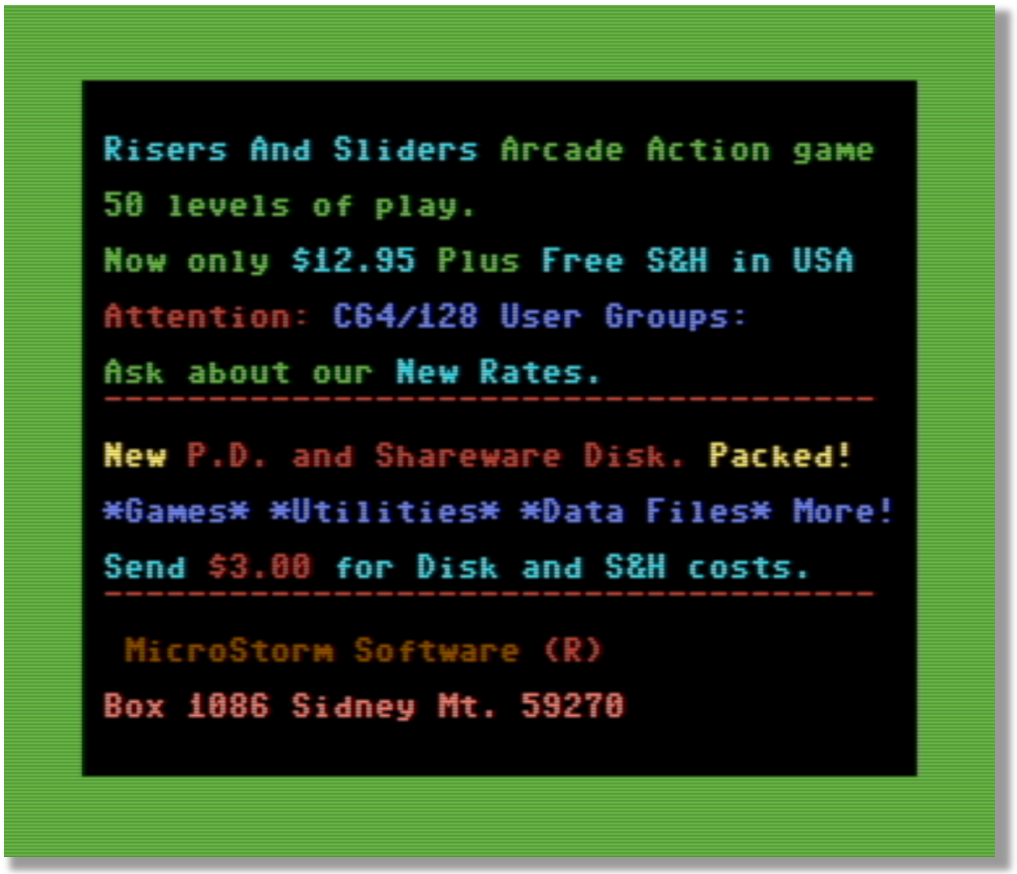

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